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ABSTRACT

Integrating new insights into the writing process, and drawing upon cognitive psychology, psycholinguistics, and sociolinguistics, this monograph develops the transactional theory of writing by using knowledge of the reading process as a metaphor. Chapters include: (1) "The Need for a New Theory of the Writing Process"; (2) "Bases for a Transactional Theory of the Writing Process"; (3) "A Transactional Theory of the Writing Process"; (4) "Engaging in Theory Critique"; (5) "A Transactional View of Writing Instruction"; and (6) "A New Look at the Relationships between Reading and Writing." A list of 182 references and an appendix containing definitions of terms for a transactional theory of the writing process are attached. (RS)

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monograph in language and reading studies

relating reading and writing: developing a transactional theory of the writing process

Nancy Katherine Leavitt Shanklin

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Indiana University's Language Education Departments initiated the Monographs in Language and Reading Studies to serve a number of purposes, including the publication of papers based on conference proceedings, research and development reports, and papers of special interest to teachers and other professionals working in the language education areas. In a reorganization of the School of Education, the departments of Applied Linguistics, English Education, Foreign Language Education, and Reading Education were confederated into a new unit—the Language Education Department. Each unit maintains its identity and at the same time participates in mutual programs, research and development, and service activities. The Monographs are an outcome of this confederation.

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Chapter I

The Need for a New Theory of the Writing Process

New developments in theory and research suggest the need to examine the reading and writing processes for similar constructs. For many years reading educators have been interested in how the two processes relate; more recently, reading researchers have proposed models of this relationship (Marshall & Glock, 1978; Page, 1974). In addition, some psychologists have proposed the need for a cognitive view of the writing process, implying in their work recognition of relationships between the cognitive processing involved in both reading and writing (Bruce, Collins, Rubin, & Gentner, 1978; Flower, 1979; Flower & Hayes, 1977, 1980; Kintsch & van Dijk, 1978).

Simultaneously, as new views toward the reading and writing processes have begun to emerge, there has been an equally strong movement in public schools, industry, and the media for a return to the basics. However, the back-to-basics views have further polarized the relationships between reading and writing rather than enlightened them.

Back-to-basics views of reading break the process into discrete skills students must learn. In the early grades emphasis is placed on phonics. The view is that once students can recode well, comprehension is a matter of putting together the individual meanings of words. Meaning is thought to be lodged in the text and subsequently reconstructed by the reader during comprehension. An exact match occurs between the writer's intended meaning and the reader's understanding of it. This view fails to consider, however, the active role readers play in comprehending text and new views of text meaning.

Likewise, back-to-basics views break writing into discrete skills. Children first learn to print, then to write words, next to construct sentences, and finally to create longer compositions. Importance is placed on developing correctly written products, leading to an emphasis on spelling and grammar. Additional emphasis is placed on the forms of written products which writers are encouraged to work out before they begin to write. This view of writing fails to consider how the writing process itself actually works. In particular, it does not consider the ways in which writers' choices of meaning are narrowed once the process is underway, and how new ideas may be generated during the process itself.

These back-to-basics views of reading and writing fail to consider the constructive and interactive natures of both processes. The result is to view them as mirror opposites: reading as a receptive language process and writing as a productive language process. Such a position obscures possible likenesses between the two.

Several recent theories of the reading process (Adams & Collins, 1979; de Beaugrande, 1978, 1980; Eco, 1979; Goodman, 1967, 1978; Rumelhart, 1978) and studies by cognitive, psycholinguistic, and sociolinguistic researchers refute a narrow view of the basics in reading. In writing, researchers have begun to investigate process as well as written products. The result of these efforts is an expanding awareness of parameters of the writing process and the variables that impinge upon it. These developments have begun to influence instructional practice as well. More emphasis is placed on the process of writing rather than the product with more attention given to journals, prewriting activities, peer editing sessions, student conferences, and sentence combining.

In light of these developments there is a need to re-explore the relationships between reading and writing as processes. However, before this can be done, a new theory of the writing process must be developed, one that integrates new insights into the process, and draws upon cognitive psychology, psycholinguistics, and sociolinguistics. This study involves development of such a theory by using current knowledge of the reading process as a metaphor to help create a new theory of writing.

Additionally, while there have been a number of new developments in the fields of both reading and writing in the past 10 years, many researchers and educators in one field remain unaware of, or hold misconceptions about the other. Most reading educators are not aware of writing theory or methodology useful in enhancing students' writing development in ways that also support growth in reading. This problem is particularly acute for elementary teachers, reading specialists, content area instructors, and college professors who, feeling pressured to teach writing, design writing tasks related to reading assignments. In turn, most writing educators are not cognizant of new insights into the reading process that can lead students to develop their own writing abilities. If a new theory of the writing process can be developed that is more congruent with reading, it should provide guidance for the development of instructional methodologies and learners' subsequent growth in both process areas.

More specifically, Chapter I of this study documents the current decline in writing ability and the reasons for such a decline. It then focuses on calls for a new theory of writing and for reasons why a constructive theory of the writing process is needed. Forming the bases for development of a new theory, Chapter II reviews prior studies of the relationships between reading and writing, explains recent developments in language research, discusses process theories of reading, and finally critiques several recent theories of writing.

In Chapter III a transactional theory of the writing process is proposed that uses schema-theoretic views of reading as a metaphor. In Chapter IV, the resulting new theory is critiqued using methods proposed by Hawes (1975), and Steiner

(1977). The theory is examined for external and internal coherence and its explanatory power checked against the results of several recent process studies of writing.

Having supported the validity of the new theory in Chapter IV, Chapter V discusses implications of the new theory for writing instruction. Finally, Chapter VI examines, anew, the relationships between reading and writing as cognitive processes and how they can be taught to enhance growth in both areas. As a whole, the study attempts to discover "the basics" shared in reading and writing.

The Decline of Writing Ability

Media Analysis

During the mid-1970s the media brought to public attention the possibility of a decline in writing skill among children and adults. In *Reader's Digest*, Packard (1974) analyzed the question of whether the United States was becoming a nation of illiterates. He cited the then recent case of "John Doe," who sued the San Francisco Unified School District for a million dollars because he was awarded a high school diploma even though he was barely literate. Packard also examined a 1971 Harris Poll, SAT data, and results of the 1969 National Assessment of Educational Progress (NAEP) writing tests for further evidence of a writing decline, and concluded one had begun. Reasons for the decline as listed by Packard were: (a) the loss of status in education of writing as a subject, (b) the growing use of multiple choice tests, (c) English teachers' overloads, (d) the widespread sale of term papers, (e) open admissions to colleges, (f) a revolt against rules, and (g) the side effects of telecommunications.

The following year articles in both *Time* (1975) and *Newsweek* (Steils, 1975) echoed such a theme. The feature article in *Time*, which focused on the deterioration of language in all communicative areas, suggested that

1. Students do not view writing as an important means of communication because they see even millionaires "who write abominably" (p. 35).
2. College English teachers now find themselves assigned more often to teach basic reading and writing skills than to introduce students to literature.
3. Even many journalism students cannot pass minimum grammar and spelling tests.

The article that appeared in *Newsweek* has since become the initial source most frequently cited in popular articles on the decline in writing ability and the need to return to the basics. While the phrase "back to basics" was never used in the article, such a view was implied. Strongly suggested was a need to place more emphasis on spelling, punctuation, and grammar.

In subsequent articles in *Saturday Review* and *Harper's*, Wilson (1976) and Lyons (1976) challenged this solution to the decline in writing ability. Wilson argued that English teachers ought to be spending more time with children on writing and less on grammar. At the college level, Lyons blamed the decline on the fact that most English faculty members did not want to teach writing and that the job was left exclusively to teaching assistants who typically had little training.

At this time Mead (1976) also joined the writing debate, offering yet another view of the decline. While admitting that many children were not becoming competently literate, she thought too much concern about the issue posed a danger:

> In the end, of course, this adult anxiety paralyzes the children most of all, and they cannot learn. . . .
>
> Our most immediate task, then, is to change the level of our expectations. Instead of indulging in worry that carries with it the expectation of failure—and our contempt for those who fail—we must be convinced that what other children have done and are doing, all our children can do. We must establish a nationwide expectation that all children can and will be taught to be literate. (pp. 63-64)

Besides the need for educators and parents to show this basic confidence, Mead reasoned that children could be helped by having teacher and parent models who wrote. In addition, she believed children should be given plenty of writing opportunities, and exposure to the entire literacy process which involves all the communication systems. They should experience grappling with ideas, printing their thoughts, publishing their work for others, and then reading and criticizing and weaving new patterns of ideas out of old ones. This view of what is basic was quite different from that taken in most statements in the popular media.

At first this review of media interpretations of the writing decline may seem unnecessary. However, as a major translator and interpreter of news to average citizens, the media play an important role in shaping public opinion on any issue. Holding schools accountable and becoming alarmed at reports of a general decline in writing, the society at large, parents in particular, want action similar to that outlined above. In turn new legislation and decrees are being passed at federal, state, and local levels. But in reality does a decline in writing exist? Are reasons for the decline and subsequent solutions offered in the media accurate? Indeed, can one find any agreed-upon causes and solutions? It would seem that a look at the problem from the perspective of writing experts might be advisable.

Experts' Analysis

The writing test developed by the National Assessment of Educational Progress has been given three times, in 1969, 1974, and 1979. In a careful review of the subsequent results reported by NAEP, Mellon (1976) concluded,

> We have, then, despite its narrow data base, meaningful across-the-board evidence of decreased writing ability in 1974 as compared with 1969. Although we cannot establish in its own terms whether the decrease is part of a trend, if we place it in context of the verified slide in verbal scores since the late Sixties on college entrance examinations, set alongside increasingly alarmed testimony from college composition teachers as to the writing proficiency of entering freshmen, we create a composite picture that provides ample ground for believing the writing skills of school children to be currently in a state of decline. (p. 71)[1]

In an ERIC/RCS interview (Dieterich, 1977), William Lutz and Edward M. White, two noted writing specialists, agreed that a decline was occurring. Lutz noted the

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[1] From "Round Two of the National Writing Assessment—Interpreting the Apparent Decline of Writing Ability: A Review" by J. C. Mellon, *Research in the Teaching of English*, 1976, *10*, 66-74. Reprinted by permission.

number of prestigious schools initiating remedial writing programs and the decline found at his own institution in scores for diagnostic pre-tests. White also cited norm-referenced achievement test scores and the generalized concern among faculty at his school about student writing.

Reiding (1978) and Purves (1977), however, have warned that caution should be used in interpreting test scores that document a decline in writing ability among students. Reiding pointed out that some tests used to document a decline do not actually test writing. For example, prior to 1978 the Test of Standard Written English, created by the College Entrance Examination Board, assessed ability to use standard written English by using objective test items and prefaced it with the statement that it was "not a test of creativity or organization of ideas, two considerations vital to and in composing" (p. 308). Reiding also cautioned that "test-makers and test evaluators must not conclude that competency with one facet of the writing process necessarily equates with competency with another facet" (p. 308). A student who writes well in one mode may not be equally competent in another. A student who can write coherent sentences is not necessarily equally able to write a coherent 500 word essay.

Purves raised additional concerns. He cited a recent study in which students, given both a pre- and post-test impromptu essay, showed no improvement. However, students' scores showed much improvement on an out-of-class essay assignment for which students had more time.

While writing researchers tend to agree that test scores have been showing a decline in writing ability (but as pointed out above, the tests themselves are subject to criticism), they view reasons for the decline as more complex than the media do. However, these experts have not agreed on causes for or solutions to the decline. The only points on which they seem to agree are: (a) solutions lie in determining what is basic, and (b) media and public ideas of what is basic are not well-founded.

More specifically, in the interpretive section of the 1976 NAEP report, Lloyd-Jones and Winterowd (Mellon, 1976) suggested several reasons for declining scores.

> students write less well because they now read less; that motivation to write is on the wane due to increases in telephone use and visual communication, and less reliance on writing in business; that teachers are assigning less writing because their class size has increased and with it their theme marking time; that increases in personal narrative have reduced the amount of utilitarian writing (exposition, presumably) done in school; that the Edited Standard English used as a writing model in schools is after all a dialect and an idex of social status towards which fewer students now aspire; and finally, that young people may be writing a changed form of language incorporating techniques of visual coherence absorbed from television, to which the scorers of over-all quality may have applied outmoded standards of judgment. (p. 71)[1]

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[1] From "Round Two of the National Writing Assessment—Interpreting the Apparent Decline of Writing Ability: A Review" by J. C. Mellon, *Research in the Teaching of English*, 1976, *10*, 66-74. Reprinted by permission.

Mellon legitimately raised the concern that these reasons were only speculations having no research base. He then offered a hypothesis of his own: teachers in the 1970s were simply not spending as much time teaching writing as those of the 1960s.

Brereton, in "Learning from the Writing Crisis" (1978), pointed out that, under fire, schools have "taken the line of least resistance, caving into back-to-basic demands, loading the curriculum with heavy doses of grammar and mechanics, adopting the politically popular programs that promise an easy way out" (p. 363). Cowan (1977) provided some insight into the exact components that make up this back-to-basics approach. She saw them as (a) prescriptive grammar mastered through drill, exposure to rules, and correction, (b) traditional rhetorical principles as a basis for instruction in writing, and (c) correctness in mechanical skills. She believed such approaches might not be appropriate for today's students, in particular because they do not take in account recent knowledge about how one learns to write, components of the composing process, and the ways in which control over mechanics is developed.

As schools have felt the pressure to produce better student writers, all teachers have been asked to place more emphasis on writing in their classrooms. The proliferation of articles over the past few years on this topic is proof enough (for elementary teachers, entire issues of *Language Arts*, in August, 1977 and October, 1979; for English and science teachers, the *English Journal* for April, 1978; and for social studies teachers, the March 1979 issue of *Social Education*). Echoing Cowan's concerns, Griffin (1977) raised the fear, quite rightly, that under such pressure and lacking adequate preparation to teach writing, teachers would revert to what they knew best:

> Some may teach whole courses in grammar, labeling parts of speech, diagraming sentences, and correcting mistakes in exercise books. Others, with vague memories of their own college composition course, may teach "creative writing," or require complex literary analysis. Still others may overemphasize sophisticated distinctions about usage—the difference between who and whom, affect and effect, or they'll spend as much time teaching how to punctuate restrictive and nonrestrictive clauses as they do teaching how to punctuate compound sentences. In short, they'll go back to whatever their version of the basics is. (p. 6)[1]

In the end, conscientious teachers and citizens wishing to know what they may do about the decline in writing may certainly feel confused by the variety of opinions, even among experts. Members of the back-to-basics movement would place emphasis on precision and mechanics. Writing experts seem to agree such emphases do not really lead to writing improvement. While experts suggest other reasons for the writing decline, and one can begin hypothesizing approaches to writing from their suggestions, the reasons remain mostly speculations. As a result, persons may wonder what research evidence exists to support particular views of writing in the schools. To date such research evolves from three questions: (a) What types of writing are done in the schools? How much? For

[1] From *The Decline in Writing Ability–What the Secondary Teacher Needs to Know How to Teach* by C. W. Griffin. Reprinted by permission.

what audience? (b) What is the nature of instruction? (c) What is the emphasis of evaluation?

The Research

How much? What kinds? To what audiences? Studies seem to document that not a great deal of writing is being done in schools or colleges. Britton, Burgess, Martin, McLeod, and Rosen (1975) have pioneered the studies on this topic. In examining the writing development of British school children ages 11-18 from 2,200 scripts, Britton et al. found several trends. The audience of 11-year-olds was predominantly teacher-learner dialogue (51%) and pupil-to-examiner (40%). With each ensuing year these two subcategories continued to remain the most prevalent audiences addressed. However, with each year the percentage of pupil-to-examiner dialogue increased, to a high of 61% at age 17, while teacher-learner dialogue gradually declined to a low of 19% at age 17. While there was some evidence that students aged 15 and 17 wrote for a wider range of readers, the proportion was generally low and most always related to writing for English classes. Finally, when writing in various subject areas was analyzed for audience addressed, major contrasts emerged between the pattern of writing in history, geography, and science, and that of writing in religious education and English.

In relation to function (What kind?), most surprising to Britton et al. was the almost total absence of expressive writing. Transactional writing was most prevalent at all levels with the percentage increasing with age. When the transactional category was further subdivided, informational writing that developed analogies was most frequent, increasing markedly for the 15- and 17-year-old levels. In contrast, informational writing which was speculative or necessitated close paraphrase remained comparatively low at all levels. Students at ages 11, 13, and 15 did some poetic writing; however, by age 17 this form dropped significantly as transactional writing increased. In relation to school subjects, poetic and expressive writing seemed to be encouraged only in English and religious education.

From a similar study of three Canadian schools needing to develop school language policies, Fillion (1979) obtained similar results. Fillion wanted to find answers to three questions about students in these schools: How much writing were students actually doing? What kinds of writing were they doing? In which subjects?

Results from the first two schools, both junior high schools, found students doing little writing and virtually none in the undirected category. In the third school (grades 9-13) Fillion found that students were writing but only for a very narrow range of purposes.

> To the extent that School C's findings accurately reflect actual practices, they do indicate a clear "language and learning policy" with regard to writing. Writing is done primarily to improve and demonstrate the retention of information. Writers seldom deal with their own ideas, language, or understanding of material to demonstrate some degree of independent thought and work with the content, and they virtually never write imaginatively, or about their own experiences. (p. 54)

Interestingly, Fillion reported that when teachers were first shown the results, they expressed more concern over the fact that no examination had been made into the quality of student writing than over the narrow range of types revealed by the study. Fillion concluded, "They were much more in favor of a policy which would 'correct' writing than one which would deal with its uses for learning" (p. 54).

While the two studies just discussed were of British and Canadian schools, one wonders if similar findings might emerge from a study of U.S. schools. To date, a large scale study of this nature has not been completed in American public schools. Only at the college level have a few studies begun to emerge in addition to a small survey completed by Donlan (1976).

Gere (1977), in a survey of the writing done by students at the University of Washington, found that "one or more courses in over half the departments surveyed requires only short answer or computational exams of students—no writing is assigned" (p. 61). Of greater concern to Gere, however, was that the writing done, except for journal entries and some critical papers, was in the extensive mode. Gere believed students should be allowed to do more writing in the reflective mode. In the absence of this mode, "they will fail to comprehend the value of language for its own sake, the delight of showing and exploring ideas and experiences and the effect writing can have on their own lives" (p. 64).

In a similar study at American University, Behrens (1978) found students wrote fewer papers expressing personal observations as they progressed through their undergraduate programs. The survey revealed that faculty felt both writing and reading skills had declined over the past 10 years. While they found that problems of usage, punctuation, and spelling were most frequent, they reported being more concerned about students' ability to organize thoughts. However, a significant proportion of them reported they did downgrade for errors in mechanics as well as organization.

The only U.S. research into writing across content classes has been done by Donlan (1976). Reflecting not amount, but type assigned, Donlan found that content teachers say they assign writing. Results suggested that mathematics and science teachers favored reporting (the retelling of facts) over exposition (the development of an explanation), whereas social studies teachers tended to equally favor exposition and reporting.

In a follow-up survey, Donlan (1976) analyzed the writing assignments found in junior high mathematics, science, and social studies texts. He found that a greater proportion (45%) of surveyed science textbooks included writing assignments than did either mathematics (5%) or social studies (19%) textbooks. The writing assignments found in math and science texts were almost exclusively reporting. Social studies texts included a somewhat wider variety of assignments with 44% of a reporting nature and 46% exposition. Assignment of narrative or argumentative modes were infrequent in any of the texts. Documented by Donlan's research was the fact that writing in each content area seemed to require skills and modes of organization peculiar to itself. The fact that narration was

assigned only infrequently in content area classrooms (although it was the most frequently assigned mode among English teachers) suggested reasons why students needed to be encouraged to write in all content areas.

What instructional emphasis? While Donlan's work suggested content teachers do assign writing, one might question the exact methodologies employed. From a survey of 92 teachers, grades K-12, Donlan (1974) developed several hypotheses. Results from a pilot study hinted at what might be found from a large scale study. Among the teachers surveyed, the least popular method of teaching writing was the use of student committees. This finding implies that most teachers did not believe that students as well as teachers ought to critique and assist each other. Methods preferred by teachers were (a) an explanatory sheet, (b) a model paper, and (c) breaking the assignment into stages and teaching each stage separately.

Other surveys shed light on the instructional focus of language arts texts used in elementary schools, secondary schools, and colleges. In a survey of eight popular elementary language arts texts, Graves (1977) found that (a) a high emphasis placed on mechanics increased with grade level, (b) the teaching of writing was basically a situation in which the teacher dictated the task, and (c) very little help was recommended for writers while they were actively engaged in the writing process. Koops (1978), in a survey of 50 secondary texts on writing, concluded that the textbook market for writing texts was extremely conservative and "consequently, widely used composition books tend to perpetuate traditional approaches to composition" (p. 24). In a similar review of 34 popular college composition texts, Stewart (1978) found only seven contained an appreciable awareness of the latest thinking toward the composing process, writing behavior, and stylistic options.

From a growing number of studies, however, it would seem that students do not compose in the manner suggested by their texts. Emig (1971), Stallard (1974), and Pianko (1978) have found that students do little planning for school sponsored writing. Their level of commitment to such writing is minimal and produces little that is personally challenging or of real quality. A conclusion of all three researchers is that more emphasis should be placed on the process of writing than on examination of products, the approach of most composition texts.

What focus toward evaluation? A final area of school writing studied is evaluation. In the previously discussed survey, Donlan found that a large percentage of content teachers disposed of student papers in no systematic way. Therefore, they had no way to clearly assess students' progress or to guide students' growth in writing. In grading, teachers (a) indicated that marking faulty sentences was their least favored method of grading, (b) favored marginal comments over comments at the end, (c) favored evaluating papers for both form and content, placing more emphasis on content.

Actual studies into factors affecting teachers' evaluations of compositions have called into question the validity of teacher self-report data like that above. While most surveys (Behrens, 1978; Zemelman, 1977) have found teachers stating

that they graded for content more than for form, research studies that asked teachers to actually rate papers found the majority were most influenced by errors in mechanics. Harris (1977) concluded,

> Analysis of the data revealed a number of response patterns that were of particular interest. First, the criteria that teachers think are most important may not always be the criteria that most influence them when they evaluate student compositions. A second pattern, and one of the most interesting, revealed an inverse relationship between the criteria that the teachers think are most important and the criteria that they use most often in marking and correcting student compositions. (p. 176)[1]

A second Canadian study by Stewart and Grobe (1979) further supported the Harris study. These researchers found a positive and significant correlation of quality ratings with number of words written and with the absence of spelling errors but not with the measures of syntactic development used, except at grade five. Length of compositions and freedom from spelling errors accounted for about 25% of the variance in teachers' quality ratings. In discussing the implications of their study, Stewart and Grobe pointed out why the discrepancy between teachers' self-reports and factors actually affecting their evaluations was important. Particularly at the upper grade levels, students in the study who tried to use more complex sentence structures left themselves open to more errors and were unduly penalized by teachers who placed more weight on mechanical correctness than on evidence of syntactic development.

As this review has documented, the problems surrounding writing in the schools may indeed be serious. Though sketchy, the research indicates that little writing is done by students and only for a narrow set of purposes. Students are rarely encouraged to view writing as a means of thinking. Such is indeed difficult if, as these studies have suggested, teachers are most influenced by mechanics when assigning grades. This being the case, students are encouraged to write what is safe rather than to experiment with language.

A Dilemma

When elementary, content, or reading teachers want to learn more about how to teach writing, they soon find themselves embroiled in controversy. Even experts in the field of writing would agree with this observation (Bergen, 1976; Corder, 1977; Donlan, 1979; Parker & Meskin, 1979). For example, Myers (1978), in a broad view of the field, suggested that there were five approaches to writing from which to choose: the Models Approach, the Steps Approach, the Sentence-Combining Approach, the Relationships Approach, and the Theory of the World Approach. Myers acknowledged that the five views were based on different assumptions and employed widely different views of writing. He believed these differences were important for researchers to consider but posed no serious

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[1] From "Teacher Response to Student Writing: A Study of the Response Patterns of High School English Teachers to Determine the Basis for Teacher Judgement of Student Writing" by W. H. Harris, *Research in the Teaching of English*, 1977, *11*, 175-185. Reprinted by permission.

problems for teachers. "The wise teacher uses something of each of the five approaches, selecting what is most appropriate for the student" (p. 41).

Such a statement should make serious educators uneasy. If these five models are indeed based on differing assumptions and result in widely varying views, it seems incredible that they are all equally valid. A more likely result is that found in a survey by Zemelman (1977) of college teachers:

> "Blame," "complaint" are not to the point. We talked to many good, energetic teachers. What they lacked most was a conscious approach to the problem of students' writing. Even among those who ranked highest in our measures, few appeared to have achieved this. Many teachers had identified students' needs; some had devised techniques to meet those needs. But only occasionally did a teacher have an analytical view that would reveal methods for getting around problems that usually arise when a new activity is tried. Repeatedly when a teacher was asked about a particular kind of writing, the answer would be "I tried that but it didn't work." (pp. 233-234)[1]

Without an adequate theory to guide instructional methodology, this abandonment of a strategy after the first try can be expected. However, an alternate explanation as to why a strategy does not work the first time is that, indeed, one has tapped into students' undeveloped (or misconceived) concepts of the writing process. One can hardly expect to teach or "cure" such concepts in a single lesson.

Calls for a New Theory of Writing

Recently several experts in the field of writing have emphasized the need for development of a new theory of the writing process. Young (1978) has stated that research and instruction in writing have been limited by reliance on a singularly narrow view of the process. This view he has labeled the current-traditional paradigm and characterized as follows:

> the emphasis is on the composed product rather than the composing process; the analysis of discourse into words, sentences, and paragraphs; the classification of discourse into description, narration, exposition, and argument; the strong concern with usage (syntax, spelling, punctuation) and with style (economy, clarity, emphasis); the preoccupation with the informal essay and the research paper; and so on. (p. 31)[2]

Young has criticized the product approach because it fails to recognize the difficulty of first generating a clear problem statement as an important part of an adequate theory of the entire writing process. He believes four different theories of invention, developed over the past 15 years, have emerged as competitors to succeed the current-traditional writing paradigm: classical invention, Burke's dramatistic method, Rohman's prewriting method, or Pike's tagmemic invention.

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[1] From "How College Teachers Encourage Students' Writing" by S. Zemelmen, *Research in the Teaching of English*, 1977, *11*, 227-234. Reprinted by permission.

[2] From "Paradigms and Problems: Needed Research in Rhetorical Invention" by R. E. Young, in C. R. Cooper and L. Odell (Eds.), *Research on Composing*. Copyright 1978 by NCTE. Reprinted by permission.

Young sees a need for research to determine which of these four new theories is best.

While these four theories admittedly differ from one another in certain ways, they also share certain likenesses that prevent any of them from becoming an adequate theory of writing. All four concentrate more on the generation of ideas before writing begins than on the actual process itself. They also fail to adequately account for the memory limitations of the brain as related to the process. In addition none of these models adequately explains the role that reading of one's own text, as it is created, plays in the writing process.

King (1978) has suggested other reasons for lack of an adequate theory of writing. King criticizes previous research for its failure to "scrutinize writing at 'the point of utterance'" (p. 12). She believes a new theory will have to take into account the importance of context, particularly in relation to how writing develops in home and school environments. She projects that a new theory will emphasize the importance of the semantic base of language, fit within a larger theory of language, and involve the integration of knowledge from a variety of disciplines. It will also involve a description of general stages of the process that might hold across diverse tasks and a taxonomy of writing strategies. In her reference to stages, King is reflecting a belief popular in most views of the process: Rohman refers to the stages of prewriting, writing, and rewriting; James Britton, to conception, incubation, and production; classical rhetoric, to the five arts.

In contrast, Sommers (1978, 1979) has criticized what, she feels, are researchers' misconstrued views of the composing process as a series of discrete, temporal stages. She believes models that postulate stages "better describe the written product than the process, because they identify stages of the product and not the operations of the process" (p. 209, 1979). The use of stages suggests the writing process is linear and unidirectional, a view she opposes. Instead, she believes an adequate model of the process must account for both the linear and recursive qualities of the process.

Odell (1978) in "Teachers of Composition and Needed Research in Discourse Theory" has seemed to agree with Sommer's criticism of stage theories. Odell believes a new theory of writing must account for (a) the choices writers make as texts evolve through a succession of drafts, (b) why different writing tasks seem to make quite different demands of writers, (c) why it seems writing cannot be judged by general criteria of good writing but instead by criteria that are uniquely suited to the specific task a writer is trying to perform, and (d) why people who are skillful with one sort of writing task may not be equally skillful with some other kind of writing task. Odell's thinking may come closest to suggesting new ways to approach the writing process that avoid prior misconceptions. He would appear to be advocating a recognition of the importance of the rhetorical situation over any description of the process, and also a conceptualization of the process in terms of choices rather than discrete stages.

As a group, these researchers seem to call for a new theory of the writing process that meets criteria in two categories:

Explanatory

1. Explain the processes involved in writing and means for carrying them out.
2. Explain both the linear and recursive qualities of the writing process.
3. Explain the effect of context on writing.
4. Explain the role of semantics in the writing process.
5. Explain "good" writing.
6. Explain why writers are not equally skillful with all kinds of writing tasks.

Predictive

1. Predict choices writers make as texts evolve through a series of drafts.
2. Predict different demands different writing tasks seem to place upon writers.
3. Predict how the writing theory evolved might fit within a larger theory of language.

The Need for a Constructive View of the Writing Process

Black (1962) and Kuhn (1970) have indicated that a paradigm shift in a discipline frequently occurs through the adoption of a new metaphor: a model existing in one discipline is applied to another. Some reading researchers have suggested new models of the writing process to explain the relationship of the reader and writer as it relates to reading comprehension (Marshall & Glock, 1978; Page, 1974). While their primary intention was admittedly not a new theory of writing, one can glean from their models (a) a recognition of a need for a writing theory that emphasizes process and (b) a notion on their part, though vague, that a new theory of reading might be a metaphor for a new theory of writing. These two models, however, have been inadequate in their conceptualizations.

Page states that the purpose of writing is getting meaning into print and the purpose of reading is getting meaning from print. Both processes he views as constructive. He believes the interrelationships between reading and writing can most fruitfully be studied by assuming that communication is the intent of both the writer and the reader. Thus, at one end of Page's model (see Figure 1.1) is the writer and at the other, the reader. The graphic surface structure is the observable link between the domains of the writer and the reader. Page examines the process performed by the writer in going from self to print. In turn, he generates the process performed by the reader in going from print to comprehension. It seems, according to Page, that similarities exist between the reading and writing processes in the forms of knowledge, meaning, deep structure, and surface structure. The reading and writing processes appear to be linear opposites as well. In writing one proceeds from knowledge to meaning, to deep structure, to conceived surface structure, to perceived surface structure. In reading just the reverse occurs.

Page was limited in his conceptualizing of both processes by the explanatory devices of the late 1960s and early 1970s. He relied on transformational grammar, a limited view of semiotics (signs only in relation to the generation of lexical

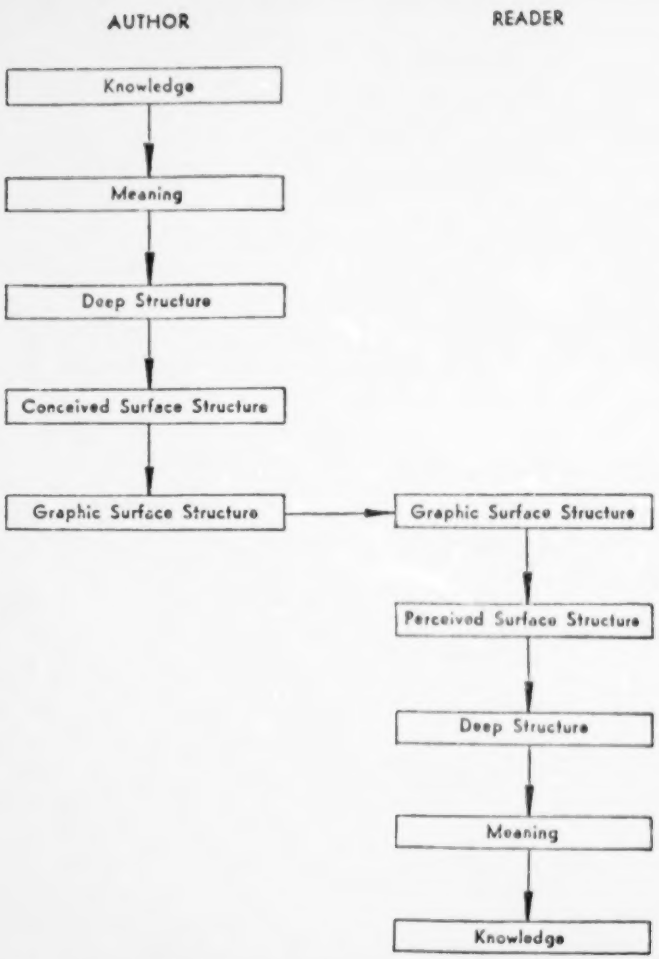

Figure 1.1. A general concept of writing and reading. (From "The Author and the Reader in Writing and Reading" by William D. Page, *Research in the Teaching of English*, 1974, *8*, 170-183. Copyright 1978 by the National Council of Teachers of English. Reprinted by permission.)

items), and the newly developed Goodman Model of Reading. While his basic notions of (a) the need to look at the interrelationships of reading and writing, (b) communication as the key conceptual assumption, and (c) the writer-reader (shared graphic surface structure) are laudable, recent developments in both reading and writing theory and research suggest better mechanisms to make both processes interactive, and to look anew for relationships between them.

A more recent model of the relationships between the writer and the reader, reflecting work in propositional analysis, was posed by Marshall and Glock (1978). They viewed "comprehension. . . as part of a cycle of communication between writer and reader" (p. 48) (see Figure 1.2).

Starting from the point of entry at the bottom of the model and moving in a clockwise direction, Marshall and Glock proposed a more interactive model of the reading process than did Page. However, while Page recognized reading as a constructive process in which the reader's interpretation was not necessarily an exact match to the propositional base of the writer, Marshall and Glock did not. They viewed good comprehension as the reader's ability to reconstruct the propositions found in or inferred directly from the text.

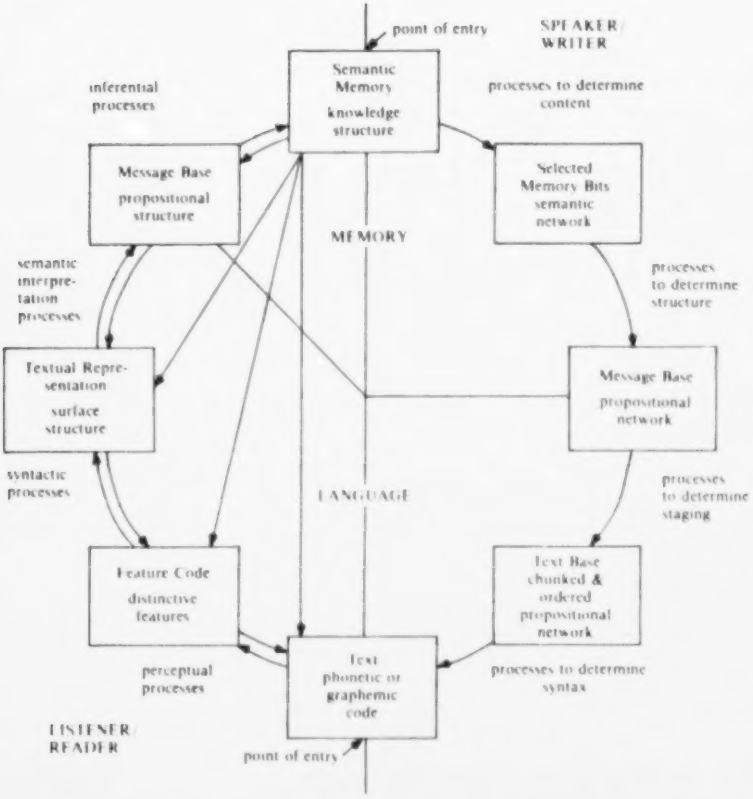

Figure 1.2. Model of the communication process. (From N. Marshall and M. D. Glock, "Comprehension of Connected Discourse: A Study Into the Relationships Between the Structure of Text and Information Recalled," *Reading Research Quarterly*, 1978-1979. Reprinted with permission of the authors and the International Reading Association.)

Examining Marshall and Glock's view of the writing process by moving in a clockwise direction from the top of the diagram downward, one finds their view of writing as linear as that proposed by Page. From one's semantic memory, bits are selected that form a semantic network and involve processes to determine content. Processes to determine structure are then applied to determine the message base (propositional network). Processes to determine staging are applied next and result in the text base. Processes to determine syntax are finally applied and result in the actual production of text. It should be noted that this portion of the Marshall and Glock model is similar to Frederiksen's model of discourse processing (1977).

Marshall and Glock suggest that a schema theory, defined as "the idea that the memory of the reader controls, to a considerable extent, the way in which information is processed," (p. 50) provides mechanisms strong enough to interrelate both reading and writing. However, they did not attempt to suggest what these mechanisms were. Therefore, their view of the writing process, one suspects, is far too linear and their terms too ill-defined to be of much use as a model of the writing process or relationships between the processes.

A primary objection to a linear view of the writing process is its failure to take into account limitations of the brain's processing capacity, especially short-term memory. It therefore seems implausible to postulate that a writer has all his/her ideas worked out before beginning to write or that the process is best described as a series of stages. A diagram of the relationships between the sensory store, short-term memory, and long-term memory that Smith (1978) has applied to the reading process (see Figure 1.3) seems equally useful for suggesting how the brain's memory capacity is compensated for in the writing process.

In reading, the short-term memory can process only a limited number of information units at a time. The exact size and nature of these units is determined by those already available in the long-term memory to be applied. Thus, the long-term memory directs the search procedure of the sensory store, which affects what is processed by the short-term memory, and is then stored in the long-term

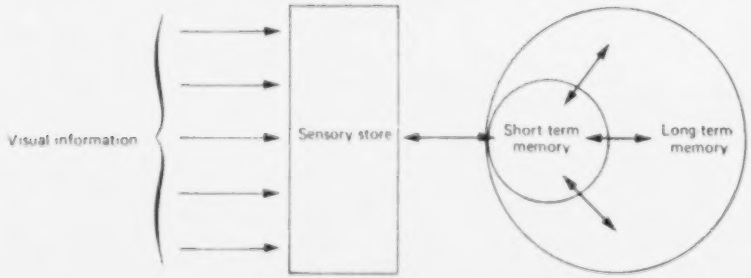

Figure 1.3. An alternative diagram for memory. (From *Understanding Reading: A Psycholinguistic Analysis of Reading and Learning to Read*, Second Edition, by Frank Smith. Copyright © 1978 by Holt, Rinehart and Winston. Copyright © 1971 by Holt, Rinehart and Winston, Inc. Reprinted by permission of Holt, Rinehart and Winston, CBS College Publishing.)

memory. This is referred to as top-to-bottom processing. At the same time, bottom-to-top processing also occurs as incoming visual data is passed to the short-term memory. Reading is thus viewed as a constructive, interactive process in which comprehension guides perception. (Also see Neisser, 1976.)

The writing process may also be viewed as constructive by applying Smith's model. It is postulated that in the writing process long-term memory serves to guide the selection of material that enters into the short-term memory. In the short-term memory final surface structure decisions are made. In writing, as in reading, material in the short-term memory decays quickly. Memory in writing, then, can be viewed as working from right to left or, in other words, top-down. At the same time, visual information comes into the short-term memory (suggesting bottom-up processing) through writers' reading of the graphics they have just produced. In writing, long-term memory acts to guide the selection of material in the short-term memory, while at the same time visual information from the text already produced acts to confirm writers' intended meanings and to aid in the production of upcoming text.

Viewed in this manner text production is an interactive rather than a linear or recursive process. Seriously questioned is a long-held notion about the difference between reading and writing, namely, that reading is easier than writing because recognition is easier than production, i.e., in writing one must produce on paper one's actual thoughts, while in reading one must simply understand the thoughts of (presumably) another. Such a view comes from misperceptions of both processes.

Reading as recognition implies that comprehension occurs when there is an exact match between the knowledge of writers and readers. But such is never the case because "a text is never fully explicit nor is reading comprehension exclusively textual" (Tierney & Spiro, 1979, p. 133).

On the other hand, writing as production implies that it is harder than reading for two reasons. The formulation of text is seen as more difficult when it is viewed as making choices between infinite possibilities. Forgotten here, however, is that bottom-to-top as well as top-to-bottom processing may occur in writing. Both act to constrain the number of choices that need to be made. In addition, writing as production frequently assumes that writing is more difficult because one has to plan a priori exactly what to say. Writing then involves the reconstruction of these plans. When the limits of the short-term memory are taken into account, it becomes apparent that much of the text produced must be worked out at the "point of utterance." Thus, the memory demands in writing can be no greater than in reading. If prior views can be challenged along these lines, it would seem that the reading and writing processes, in terms of cognitive functioning, are far more congruent to each other than direct opposites.

Smith states that reading is of necessity fast, selective, and dependent on nonvisual information. The model to be proposed by this study holds that these tenets must also be true of writing. In Chapter II theories and studies will be reviewed in greater detail to document developments in language, writing, and reading research that show the plausibility of attempting to generate a new theory of writing from recent insights into the reading process.

Chapter II

Bases for a Transactional Theory of the Writing Process

Prior Views of the Relationships Between Reading and Writing

Serious investigations of the relationships between reading and writing are relatively new to reading educators and researchers. Robinson in her landmark study, *Why Pupils Fail in Reading* (1946), failed to mention the writing ability of children she studied although she looked at a number of variables. Durkin (1966) in her two studies of children who read early found they demonstrated an early interest in writing. She states,

> Research findings indicated that for more than half of the early readers in California, and again in New York, interest in learning to print developed prior to, or simultaneously with, an interest in learning to read. In fact, for some early readers, ability to read seemed almost like a by-product of ability to print and to spell. For these "pencil and paper kids," the learning sequence moved from a) scribbling and drawing, to b) copying objects and letters of the alphabet, to c) questions about spelling, to d) ability to read. (p. 137)

Durkin did not, however, speculate on the meaning of this relationship. Interestingly, her research question focused on whether it was supportive or detrimental for children to begin reading before first grade. Never did she speculate, particularly in view of her findings, that this same question might be asked of initial writing.

Loban (1976), in his longitudinal study of children's language development from kindergarten through grade 12, found that children whose oral and written capabilities impressed teachers also had higher scores on tests of reading ability. While Loban's work would indicate a relationship may exist between children's reading and writing abilities, it was not his purpose to fully explore or explain this phenomenon.

Believing intuitively that good writers are good readers, teachers have thought for a long time that exposure to good literature improves student writing. A review of studies testing this hypothesis (Lundsteen, 1976) concluded that contact with children's literature does not automatically lead to improved writing. The review emphasized the importance of intermediate steps between students' reading of

literature and their subsequent writing. Lundsteen felt these intermediate steps should highlight children's discussions and discoveries of techniques used by authors to create meaning. Teachers can then encourage children to write about similar incidents from their own experiences, drawing on techniques used by authors but not forced to imitate them. Such methods advocate a particular view toward the generation of meaning and the learning of new writing strategies: one draws on strategies illustrated in literary models to help express one's own meaning rather than relying on literary models to discover something to say.

Lundsteen further suggested that the use of key questions is important to linking the use of literary models to students' own writing. Teachers can help students learn to ask key questions in relation to works of literature, which children may in turn use to critique their own writing. For teachers who want to couple reading and writing, the above is somewhat enlightening but leaves little guidance as to the specific questions/concepts that link both processes.

In reverse, other researchers have investigated how writing may further reading improvement. Stotsky (1975), in an extensive review of sentence-combining research, found only one study in which practice in sentence-combining led to significant improvement in reading. While finding little hard evidence, Stotsky still postulated a relationship between growth in written syntactic expression and comprehension. She believed that lack of such evidence was due to time lengths of studies and a lack of sophisticated techniques to measure such growth.

The model of relationships developed by Stotsky from her review of literature (see Figure 2.1) is important conceptually. She viewed children's language development as occurring on four fronts: syntactic, semantic, lexical, and phonological. Instructionally this development is encouraged through speaking, listening, reading, and writing activities. The first three—speaking, listening, and reading—result in improved comprehension stemming in part from growth in syntactic knowledge. Writing activities can result in improved writing ability as a function, in part also, of syntactic knowledge. Stotsky saw syntactic knowledge as related to improvement in comprehension and writing ability but had no single term for this phenomenon across disciplines. She used two different boxes at this level in her diagram.

The Language Experience Approach (LEA) has also been frequently viewed as relating writing and reading. In the LEA approach to initial reading instruction, children tell their teacher stories or recount events from their own experiences or imaginations. The teacher then writes out what the children say, producing written texts that can be used for reading practice. Through this approach children can become aware of the relationships between oral and written texts. In addition, initial reading encounters and comprehension are made easier since children read passages related to their own background experiences. However, it must be noted that in LEA it is the teacher, not the children themselves, who writes the text. Thus, while LEA represents a use of writing to improve reading, it is not the children's own writing. Presumably kindergarten and first-grade children do not write well enough to produce their own written texts which can be read or shared with others.

Kroll (1977) explored relationships between reading and writing in ways different from the methodological considerations raised above. Kroll postulated a model

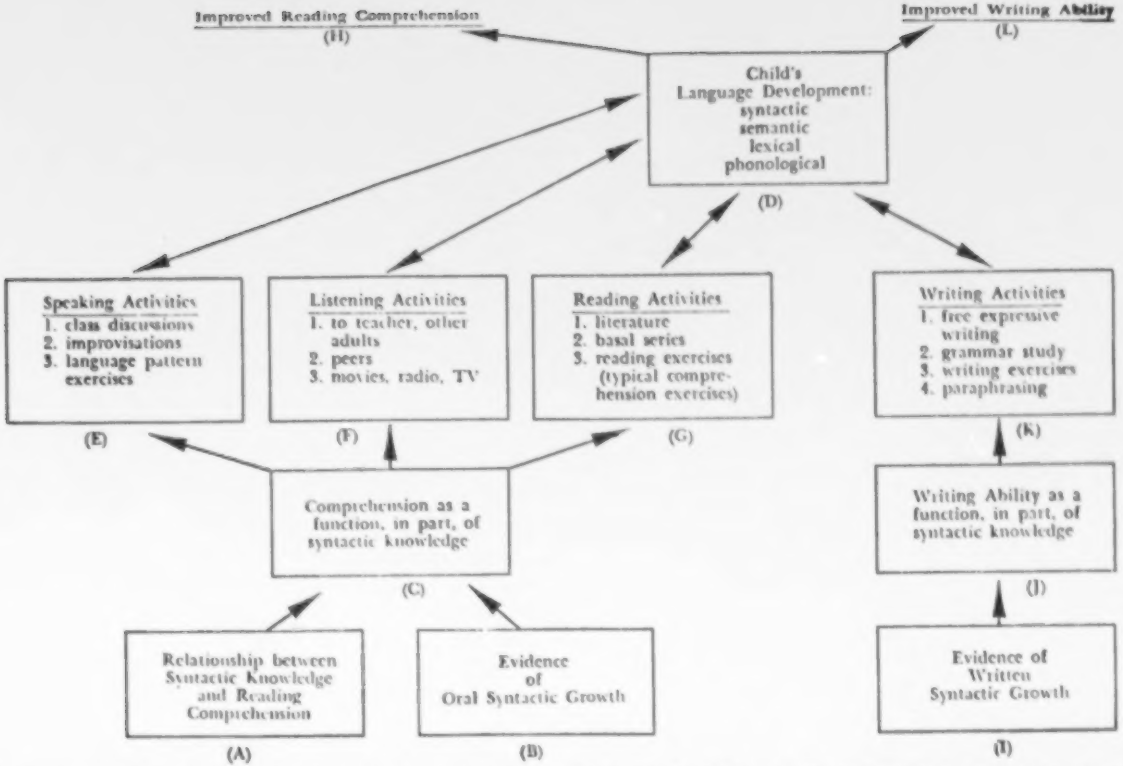

Figure 2.1. How curriculum affects the child's language development. (From "Sentence-Combining as a Curricular Activity: Its Effect on Written Language Development and Reading Comprehension" by Sandra L. Stotsky, *Research in the Teaching of English*, 1975, 9, 30-71. Copyright 1975 by National Council of Teachers of English. Reprinted by permission.)

that considered the role that reading plays in the composing process (see Figure 2.2). Writers, while engaged in the composing process, must use reading to reconsider and edit their texts. Kroll saw as particularly important the development of writers as readers, learning to reconsider their own texts from the perspective of other potential readers. He believed this ability to see one's own writing from the perspective of readers, often called audience awareness, was a late accomplishment for children. Kroll related this phenomenon to Piaget's concept of egocentrism. Present work on the writing development of young children, however, has suggested that this group already possesses audience awareness resulting from their understanding of the basic purpose of writing, i.e., communication (Baghban, 1979; Hill, 1980).

Kroll suggested additionally, (cf. Lundsteen) that reading enables good writers to internalize characteristics of good texts. As an example, he cited the usefulness of surveying and scanning in reading and how students can learn to arrange their own texts to make such activities possible for potential readers.

Kroll believed that the role of reading in the composing process did not occur in the neat linear fashion his model suggested, but instead simultaneously or rapidly alternated with other roles. He did not develop, however, the ways in which reader and writer roles overlapped in the composing process. Also, Kroll saw prewriting and writing as roles of the writer, not related to reading.

Kelling (1976) shed further light on the role reading plays during revision and editing. He was interested in explaining why students' papers were frequently full of ambiguities, vague pronoun references, and abrupt transitions, even though parts had been conscientiously read and revised. Kelling believed recent insights from psycholinguistics into the nature of the reading process could help to answer these questions.

From a psycholinguistic view the reading process involves construction of meaning from the black marks on the page. A reader is

> continually generating, confirming or disconfirming and, if necessary, adjusting predictions about the message. He uses many types of cue systems interdependently in this process: his knowledge of the world, the subject matter, and the language, as well as visual information. The reader samples only that information off the page which is useful to him in generating, testing, and adjusting his predictions, and thereby reconstructing the message. (Kelling, 1976, pp. 76-77)

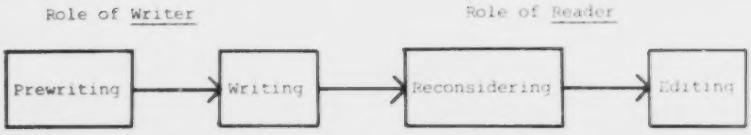

Figure 2.2. The composing process. (From "Writer and Reader as Complementary Roles" by B. M. Kroll, *College and Adult Reading*, Ninth Yearbook of the North Central Reading Association. Des Moines, Iowa: Drake University, 1977. Reprinted by permission.)

In writing, the problem is that writers, as readers of their own texts, are already familiar with the message to be communicated and can mentally construct all of the background knowledge, language, and visual information needed regardless of what cues exist, or do not exist, in the graphic display. The reviser "will not generate an incorrect message because he already knows the message" (p. 77).

Kelling implies that writers, when they read their own texts to revise and edit them, must keep their audience in mind. Writers may fail to notice ambiguities and the like because they already know their intended meaning. Kelling did not mention, however, that writers in reading the graphic display they have produced may also construct new ideas. While reading as part of the writing process may sometimes be problematic, it can also be a key to the discovery and exploration of one's own thoughts.

Finally, Kelling draws a useful distinction between reading to revise and proofreading. In reading one processes only enough of the graphic display to confirm the intended meaning. In proofreading writers must pay close attention to graphic details rather than larger issues of meaning.

Winterowd (1976), in an article entitled "The Rhetorical Transaction of Reading," discusses the relationships he saw between traditional rhetoric and psycholinguistic theories of reading. *Logos*, the development of logical arguments in rhetoric, Winterowd equates with the use of the three interrelated cueing systems in reading. *Pathos*, the development of arguments based on the nature of intended readers, he compares to the processing done by readers to construct meaning from graphic displays. *Ethos*, the development of arguments based on the character of the writer, Winterowd relates to speech act theory, which, at the time of the article, had not been applied to reading. *Dispositio*, the arrangement or form, he sees as related to readers' ability to sample, predict, and confirm meaning from the graphic display. Finally, Winterowd relates style to readability; writers have developed a good style when they have used the three cueing systems in such a way that none jars or overshadows the others. The three must work together to help potential readers focus on meaning. Here Winterowd suggests a definition of readability much different from the traditional one. Readability formulas normally focus on the graphophonic and syntactic cueing systems. Winterowd places much more emphasis on the semantic system and the interactions among all three cueing systems.

Winterowd compares reading and writing using concepts about writing derived from traditional rhetoric. However, recent developments in fields such as psycholinguistics, sociolinguistics, and psychology are enhancing knowledge about the writing process, calling into question some notions of traditional rhetoric. A number of descriptive studies have been completed in the past few years which offer new insights into the writing process, and speech act theory is presently being applied to reading. These advances in thinking about both the reading and writing processes indicate it may be useful to look anew at the relationships between them.

Before such a fresh look can be taken, however, it is necessary to develop a new theory of writing more congruent with recent theoretical developments in reading.

Reading research over the past 40 years has a tradition that includes researchers from diverse fields. Over the past 10 years similar developments in the field of writing have begun to occur.

New Developments in Language Research

Chomsky's theory of transformational-generative grammar (1957) convinced linguists and psychologists to move away from associationistic theories of language development, which postulated that children learn language through imitation and reinforcement. These theories could not account, however, for children's ability to produce unique utterances. Chomsky proposed that it was not actual utterances children learned. Instead, while listening to others, children developed hypotheses about rules underlying all sentence construction. In his work Chomsky maintained the distinction common in linguistics between a speaker/listener's competence and performance. Competence refers to ideal speaker/listener's knowledge of the structure of language versus actual performance where such occurrences as memory lapses, false starts, etc. must be taken into account.

Chomsky's work in turn led to Miller's Derivational Theory of Complexity (1964). This theory held that the greater the number of times a sentence was transformed from the surface to the deep structure, the longer it would take to process in memory. The work of Fodor and Garrett (1967), in particular, on truncated passives and relative pronouns disproved this theory. Finding that transformational grammar did not have explanatory adequacy, many psychologists abandoned it, moving from this basically syntactic approach to a more semantic one and at the same time, moving away from the competence-performance distinction because it was no longer perceived relevant. It was suggested instead that language does not exist apart from a need to communicate or, in other words, that language always has function.

Reflecting interest in the semantic base of language has been the development of several theories of discourse analysis, schema theory, and most recently theories concerning contextual variables. Discourse analysts have tended toward a bottom-up view. First they analyze the text with particular emphasis on the writer's schema and then look at the influence of the text on readers' memories. Schema theorists, on the other hand, share a more top-down interest; they are not so interested in the text itself and how it influences readers' memories, but, rather, on what readers do, i.e., the schemas they use to interpret and remember texts. Thus, in relation to memory, in which both groups are interested, discourse analysts have a more reconstructive view, i.e., how text structure/writers influence or affect readers' reconstruction of what is read. Schema theorists, on the other hand, have a more constructive view of memory and are interested in the schemas readers choose to remember and reproduce text.

Discourse Analysts

Halliday and Hasan: Cohesion analysis. Halliday and Hasan (1976) have developed a system for analyzing text cohesion, the semantic relations that exist among elements in a unit of language. Cohesive elements may be anaphoric,

referring to prior semantic units; cataphoric, referring forward to other semantic units; or exophoric, referring to elements outside the text inferred by readers. Together, the cohesion among elements in an utterance or graphic display determines the degree of texture. Relative to its degree of texture, a particular unit of language may or may not be regarded as a text. A unit of language having a number of cohesive elements, hence a high degree of texture, forms a unified whole. This unified whole, regardless of its length, is defined as a text.

Halliday and Hasan categorize cohesive relations into four types (see Figure 2.3). Personals, demonstratives, definite articles, and comparatives are examples of referential cohesion—cohesive because they refer to the same semantic unit entering into a discourse a second time. In contrast, substitution, a second type of cohesion, shows relationships between items at a grammatical level. It

Representation in linguistic system / *Type of cohesive relation*	Semantic	Lexicogrammatical (typically)
Conjunction	Additive, adversative, causal and temporal relations; external and internal	Discourse adjuncts: adverbial groups, prepositional groups
Reference	Identification:	
	by speech role	Personals
	by proximity	Demonstratives
	by specificity (only)	Definite article
	Reference point	Comparatives
Lexical cohesion	Collocation (similarity of lexical environment)	Same or associated lexical item
	Reiteration (identity of lexical reference)	Same lexical item; synonym; superordinate; general word
Substitution	Identity of potential reference (class meaning) in context of non-identity of actual (instantial) reference	Verbal, nominal or clausal substitute
		Verbal, nominal or clausal ellipsis

Figure 2.3. Types of cohesive relations and their representation in linguistic systems. (From *Cohesion in English* by M. A. K. Halliday and Rugaiya Hasan. Copyright 1976 by Longman Group Ltd. Reprinted by permission.)

includes nominal, verbal, and clausal substitution as well as ellipsis. A third type of cohesion is lexical, which relies on the understandings users of a language have about the nature and structure of vocabulary. Lexical cohesion may be reiteration or collocation. Reiterations occur when the same lexical item, synonyms, superordinates, or general words appear throughout discourse. Collocation refers to the use of semantic units throughout discourse commonly associated with one another, and can be predicted from language users' background knowledge of how the language operates. Conjunction, the fourth type of cohesion, is somewhat different from the other types. Conjunctive elements are not themselves cohesive, but instead express certain meanings which presuppose the presence of other components in the discourse. Examples of conjunctive cohesion are adverbial and prepositional groups.

Each cohesive relationship in a text is referred to as a tie. One can count the number of referential, substitutive, lexical, and conjunctive ties that exist within a particular text. In reading, it is a question of how the degree or type of cohesion in a text affects readers' ability to read and comprehend (Rhodes, 1979). In writing, the differences in the cohesion of various modes, authors, and developmental aspects of children's writing are of interest.

Halliday and Hasan have focused on cohesion analysis to develop a descriptive system able to characterize the semantic units of a text per se, and to document cohesive relationships within cohesive texts. In contrast, other discourse analysts, some of whose theories are described below, have propositionalized texts. They have done so primarily to compare texts to readers' retellings, i.e., the mental structures that occur in readers' minds as a result of encountering a particular text.

Frederiksen: Semantic processing units in understanding text. Frederiksen (1977) identifies the basic issue of his research as "A central problem in cognitive theory is to determine the nature and structure of human knowledge including that acquired from linguistic messages" (p. 57). Two assumptions underlie all of Frederickson's work: (a) the structure of a text is a reflection of the knowledge structure of the writer who produced it, and (b) the structure of the text resulting from a reader's retelling, be it oral or written, is "equivalent to the structure in memory for the information contained in the discourse" (Marshall & Glock, 1978, p. 22). Frederiksen has developed a system of propositional analysis. The resulting analysis of a text can be compared to propositional analysis of subjects' retellings. The matches, mismatches, and reader additions found allow one to gain insight into readers' comprehension of the text.

Frederiksen's text analysis system is explained most clearly by referring to Figure 2.4. A text consists of two networks—the semantic and the logical. Elements of the semantic network, he hypothesizes, are subsumed by the logical network, i.e., the logical network represents higher level processes that work to integrate various elements of the semantic network. At the lowest level of ranked units in the semantic structure are concepts. Concepts become part of relational triples, which may be of three types: resultive, processive, or stative. Resultive and processive propositions unite to become events, while stative propositions be-

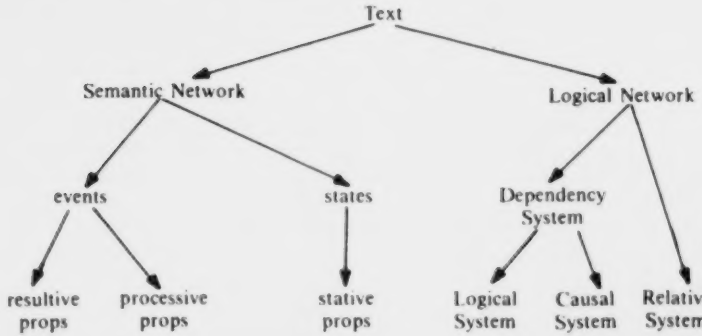

Figure 2.4. Frederiksen's model of the semantic structure of text. (From N. Marshall and M. D. Glock, "Comprehension of Connected Discourse: A Study Into the Relationships Between the Structure of Text and Information Recalled," *Reading Research Quarterly*, 1978-1979. Reprinted with permission of the authors and the International Reading Association.)

come states. Events and states unite to become the semantic network. Elements of the semantic network are further united as relative or dependency systems. The relative system represents metric relations between propositions, i.e., some quality measured in connection with another. Dependency systems consist of both the logical and causal systems.

A researcher can describe both a given text and readers' recalls using Frederiksen's system. However, in addition to recalling a portion of the text, readers will include propositions that are related but not identical to those actually found in the text. An attempt to analyze these propositions has led Frederiksen to contemplate development of a theory of discourse inferencing.

To fully explain discourse inferencing, Frederiksen believes it is necessary, from a theoretic standpoint, to consider discourse production as the other half of the communication process. One should note that the theory Frederiksen is proposing is essentially a theory of writing (see Figure 2.5). Frederiksen divides his diagram of discourse processing into various levels of product and process. The message domain consists of all the stored propositional knowledge from which a writer can select. Selections from the message domain are made using the processes of memory search, selection and pragmatic decisions, and result in the message base. Once the message base, i.e., propositions to be expressed, is decided, the writer must make staging decisions including focus, sequence, and correspondence between semantic and textual units. The result of these decisions is the text base. The final process is actual text generation, which results in the physical text.

It follows that inferencing is an important link between the two halves of the communication process. Writers in creating texts make decisions about the inferences they can anticipate that readers will make in retrieving their intended message bases. Readers then must make these intended inferences, returning to writers' message bases, if communication is to take place.

In his most recent work Frederiksen (1978) has developed a system to categorize the inferential demands imposed by propositional content, macrostructure, and cohesion of school texts upon readers. He has also developed a method for analyzing reader protocols to characterize the number and types of inferences readers make in remembering various texts. Thus Frederiksen has been able to characterize various school texts in relation to the inferential demands they make and to investigate the kinds and number of inferences readers will attempt relative to such texts.

Kintsch and van Dijk: Toward a model of text comprehension and production. Kintsch and van Dijk (1978) have developed a system of propositional analysis consisting of three levels: microstructure, macrostructure, and superstructure. They find it necessary to postulate these different levels to account for persons' comprehension of more global text meanings. The microstructure is the sequence of propositions underlying the sentences in a passage. The macrostructure, also a semantic structure of discourse, exists at a higher level than the microstructure, and is formed by combining propositions of the microstructure through the operation of macrorules: generalization, deletion, integration, and construction.

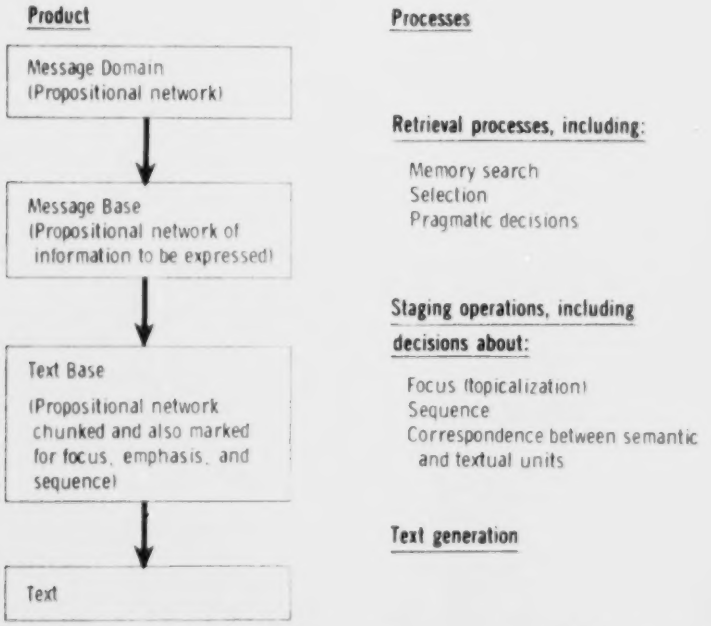

Figure 2.5. Levels of communicative decisions in discourse production. (From "Semantic Processing Units in Understanding Text" by Carl H. Frederiksen in *Discourse Production and Comprehension*, vol. 1, edited by Roy O. Freedle. Copyright 1977 by Ablex Publishing Corporation. Reprinted by permission.)

Generalization means that propositions at the microlevel may be combined at the macrolevel because they hold common characteristics of more interest at this level. Deletion occurs when macropropositions are present which subsume a microproposition and make it no longer necessary. When elements of the microlevel are combined because they are either a normal condition, normal component, or normal consequence of a macrolevel component suggested in the text, integration has taken place. Construction is like integration except that the normal condition, component, or consequence is not suggested directly in the microstructure but by readers themselves.

Beyond macrostructures texts also have superstructures which involve only the form of the discourse. (Macrostructures involve actual content.) For example, a common superstructure is the narrative. The macrostructure of a narrative, then, would include the specific content of a particular story.

The work of Kintsch and van Dijk, particularly at the level of theorizing the concept of macro-operators, is important. The nature of these rules as employed by writers and perceived by readers is at the heart of knowledge shared by both. Kintsch and van Dijk offer a theory of the production of recall protocols that is essentially a kind of specialized writing model. They view retelling as the reproduction of a text, or as the simplest form of text production, in that it does not involve the original generation of ideas. While their model accounts for how semantic information in written retellings is retrieved from memory to form a text base, they state that "the question of how the text base that underlies a subject's protocol is transformed into an actual text is not considered here" (p. 43).

Kintsch and van Dijk suggest that a superstructure guides the global ordering of the production process. Writers then use macropropositions they remember to retrieve or reconstruct micropropositions through the reverse operation of macrorules. The implication is that these processes are top-down. One should remember that Kintsch and van Dijk address all these processes at the semantic, deep structure level but do not treat the question of how writers actually convert propositions into print.

In summary, Kintsch and van Dijk's work allows one to describe a text at several levels: microstructure, macrostructure, and superstructure. Kintsch and van Dijk, unlike Frederiksen, do not go so far as to say their system represents the actual nature of mental processing. It does, however, provide a system for analyzing texts and readers' recalls. Part of the knowledge that results is an awareness of common elements used by both readers and writers.

Rumelhart, Mandler and Johnson, Stein and Glenn, Thorndyke, van Dijk: Story grammars.[1] Recently, story grammars have been developed to aid in the understanding of story production and comprehension (Mandler & Johnson, 1977; Rumelhart, 1975, 1977; Stein & Glenn, 1977; Thorndyke, 1977; van Dijk, 1977a, 1977b). These grammars are a form of discourse analysis and represent, to date, the most cogent application of this view. Story grammars are based on

[1] Thanks is given to Ms. Karen Feathers for her help with this section.

earlier work by Bartlett (1932) concerning schema for stories and by Propp (1953) concerning common story elements found in Russian folktales. The desire has been to test more empirically whether the observations of Bartlett and Propp have psychological reality. Recent efforts to develop story grammars begin with Rumelhart (1975). His work in turn has influenced the development of other grammars by Mandler and Johnson (1977), Stein and Glenn (1977), and Thorndyke (1977).

All of these grammars share certain traits. Each grammar consists of listings of the parts or elements of stories and descriptions of the relationships between these elements through a series of rewrite rules. To determine the structure of a story, it is first analyzed into propositions or parts. Rewrite rules are then applied which subsume individual propositions or story parts under larger, more general categories. Thus, a hierarchical tree structure emerges which depicts two aspects of a story: (a) the relationships between elements of the story as expressed through connections between nodes of the structure, and (b) the importance of elements of the story as expressed through the depth of the structure, with the more important elements positioned higher in the structure.

Consider the story grammar developed by Mandler and Johnson, for example (see Figure 2.6). In this grammar a story may be rewritten as a setting plus an event structure. A setting then consists of either an event or a state. A state may be written as one state connected to others through *and*-relationships. An event then may be rewritten as an event, plus another event related by *and*-, *then*-, or *cause*-relationships. When the setting has been explicated to its base structure, the event structure, the other major component of a story, is analyzed. It is rewritten as an episode, possibly connected to other episodes through then-relationships. Such breakdowns of elements continue until the level of unique base units is reached. Movement from the basic syntactic elements through nodes of the hierarchy occurs when and-, then-, and cause-markers are applied which act to show semantic relationships among the basic elements.

The application of story grammars, particularly to more complex stories, has begun to reveal several weaknesses in the present conceptualizations. First, some parts of more complex stories can not be allocated to any of the elements described in the grammars. Second, present grammars assume that a simple relationship exists between one element and another. However, in more complex stories one element may affect several others. This problem in turn leads to a third weakness. Complex elements, which intuitively are felt to be of greater importance, may end up placed lower in the tree structure because they are embedded in other events. Therefore, the importance of elements is not really represented in the hierarchical structure for more complex stories.

Problems of a different nature have also begun to emerge. There is some question whether story grammars, at least as presently conceived, are really operational. Story grammars suggest that the meaning of a story is reached through the combining of propositions using embedding rules. Text is processed linearly and the resulting meaning of a story should be the same for all good readers. New reading models and research on schemas suggest instead that

FABLE → STORY AND MORAL

STORY → SETTING AND EVENT STRUCTURE

$$\text{SETTING} \rightarrow \left\{ \begin{array}{l} \text{STATE}^* \text{ (AND EVENT}^*) \\ \text{EVENT}^* \end{array} \right\}$$

STATE* → STATE ((AND STATE)*)

$$\text{EVENT}^* \rightarrow \text{EVENT } ((\left\{ \begin{array}{l} \text{AND} \\ \text{THEN} \\ \text{CAUSE} \end{array} \right\} \text{EVENT})^*) \text{ ((AND STATE)}^*)$$

EVENT STRUCTURE → EPISODE ((THEN EPISODE)*)

EPISODE → BEGINNING CAUSE DEVELOPMENT CAUSE ENDING

$$\text{BEGINNING} \rightarrow \left\{ \begin{array}{l} \text{EVENT}^* \\ \text{EPISODE} \end{array} \right\}$$

$$\text{DEVELOPMENT} \rightarrow \left\{ \begin{array}{l} \text{SIMPLE REACTION CAUSE ACTION} \\ \text{COMPLEX REACTION CAUSE GOAL PATH} \end{array} \right\}$$

SIMPLE REACTION → INTERNAL EVENT ((CAUSE INTERNAL EVENT)*)

ACTION → EVENT

COMPLEX REACTION → SIMPLE REACTION CAUSE GOAL

GOAL → INTERNAL STATE

$$\text{GOAL PATH} \rightarrow \left\{ \begin{array}{l} \text{ATTEMPT CAUSE OUTCOME} \\ \text{GOAL PATH (CAUSE GOAL PATH)}^* \end{array} \right\}$$

ATTEMPT → EVENT*

$$\text{OUTCOME} \rightarrow \left\{ \begin{array}{l} \text{EVENT}^* \\ \text{EPISODE} \end{array} \right\}$$

$$\text{ENDING} \rightarrow \left\{ \begin{array}{l} \text{EVENT}^* \text{ (AND EMPHASIS)} \\ \text{EMPHASIS} \\ \text{EPISODE} \end{array} \right\}$$

EMPHASIS → STATE

Figure 2.6. Summary of rewrite rules for a simple story grammar. (From "Remembrance of Things Parsed: Story Structure and Recall" by Jean M. Mandler and Nancy S. Johnson, *Cognitive Psychology*, 1977, 9, 111-151. Copyright 1977 by Academic Press, Inc. Reprinted by permission.)

reading is a creative, constructive process that draws upon information found within both the text and the reader, and is not simply the reconstruction of meaning placed in the text by the writer.

Present story grammars also suggest that writing is just the opposite of reading. Writers' texts unfold in a linear order as they proceed through each of the story elements—a process of encoding a previously determined message. Again, new research (Calkins, 1979a, 1979b, 1980a, 1980b; Flower & Hayes, 1977, 1980; Graves, 1979; Perl, 1979; Sowers, 1979) would suggest that writing is a generative process whereby the message is created as the words are being written and is not restructured by the linear application of story grammar rules.

A more general story grammar that eliminates many of the above problems has been developed by van Dijk. This superstructure consists of conventional, culture-bound rules for story telling that are not, however, directly mapped onto the text itself. Instead, the narrative superstructure serves as a guide to the organization of the macrostructure (specific content) being developed through the application of macrorules. Thus, the structure constructed by a reader for a particular story is developed through the application of macrorules under the guidance of a narrative superstructure. The macrostructure defines the content of the text while the superstructure defines the global syntax of the text.

More specifically, van Dijk divides his narrative superstructure into four basic categories: (a) setting—a state or process description, (b) initiating event—an event that precipitates the action, (c) complication—an unexpected change caused by the actions involved in the initiating event, and (d) resolution—the results to the actions or reactions brought about by the events in the complication. In using this grammar to explicate stories, each minute element does not have to be assigned to some subcategory in a multilevel tree structure. Instead, the elements can be related semantically as a part of the macrostructure (by using macrorules) and assigned to superordinate story categories on higher levels of macrostructure.

In summary, story grammars, except for that of van Dijk, are similar to transformational grammars. In transformational grammars, the deep structure is reached by continually applying rewrite rules to the surface structure. Transformational grammars were found not to have explanatory adequacy. Rather than taking all semantic variables into account, operation is on the syntax. Similarly, the intent of story grammars has been to look at story retention taking a bottom-to-top view; reader comprehension is built by combining propositions of the text under certain categories using embedding rules. Writing, then, is viewed as the opposite of this process. Both views, however, negate the generative and recursive natures of reading and writing. Only van Dijk's story grammar suggests ways the interactions between text and reader can be accounted for in both the reading and writing processes.

To date, discourse analysts have been most interested in reading and not in writing, developing systems for describing the nature of texts, and researching both theoretically and experimentally how readers use or are influenced by text structure in recall. In other words, how does text structure affect what becomes stored in memory? It has been necessary for researchers to assume that readers' verbal or written protocols reflect what is actually stored. Discourse analysts began with the view that readers tap into structures provided by writers to

remember prose. Good comprehension occurred when there was a close match between the propositions of the text and those of readers' protocols.

However, it has become apparent that not all needed information is explicit in a text. Readers must infer some information. Furthermore, researchers have found that readers do not necessarily use the structures provided by writers to recall passages but, instead, supply their own. Recognition of the more active role played by readers has forced discourse analysts to take a more interactive view of the relationship between readers and writers as a communicative process, and has encouraged both Frederiksen and Kintsch and van Dijk to postulate models of discourse production as well as discourse comprehension. Beginning to be illuminated is knowledge about the nature of text that both readers and writers share and tap into. So far this knowledge includes cohesion, story grammars, and inferencing.

Combining knowledge from the discourse analysts, the following seems a fair accumulation of those concepts about text shared by writers in production and readers in comprehension. From Kintsch and van Dijk it would seem that both readers and writers are aware that text operates on three levels: the superstructure, the macrostructure, and the microstructure. Story grammars represent a kind of superstructure both readers and writers rely on—readers to construct the meaning of a text mentally, and writers to construct meaning on paper. Cohesion analysis by Halliday and Hasan represents one detailed way of examining the microstructure of a text. Writers and readers share knowledge regarding the normal operation of cohesion in text. For example, readers know the meaning of a pronoun often may be inferred by an anaphoric referent, and experienced writers know they must supply such a referent if a pronoun is to be correctly understood by readers.

As the above example hints, in addition to this shared knowledge about text structure, writers and readers seem to share knowledge of strategies or procedures that can be used to construct meaning. Kintsch and van Dijk propose macro-operators of generalization, deletion integration, and construction. They view these strategies as used by readers to form the gist of a passage (bottom-to-top view) and inversely by writers to form a text base (a top-down view). One might agree that both writers and readers are aware of macro-operators, but argue that they are used more interactively among levels of text.

Finally, Frederiksen's work suggests that readers must make inferences at different levels—the micro-, macro-, and superstructural—to construct the meaning of a text. Writers in turn seem to make differing inferential demands on readers. It would seem readers and writers must share knowledge of different types of inferences that can be made if meaningful communication is to occur. However, not explained by the discourse analysts are (a) how writers anticipate which inferences readers will make, and (b) how readers know which inferences are acceptable.

Schema Theorists

In contrast to discourse analysts, schema theorists have been interested in learning how the mind processes, stores, and retrieves input. They are more

interested in the structures the mind imposes on the passage than the influence of the structure inherent in the passage on the mind. There is presently no single accepted statement of schema theory, though the broad outline is fairly well defined (Rumelhart & Ortony, 1977); there are several researchers in this area whose theories are generally similar but specifically different (Bobrow & Norman, 1975; Minsky, 1975; Shank & Abelson, 1975).

Schema theorists postulate that the human memory system is made up of interacting knowledge structures called schemas. Persons do not have schemas for every specific concept or event. Instead, schemas represent stereotypical concepts and in any given context variables in schemas take on values specific to the given situation. Sometimes information to fill each variable or slot in a schema is not clearly present. Learners must then assign values by making inferences as to what is commonly true. These inferences to fill slots in schemas are called default values. When values have been supplied for all the slots in a schema, the schema is said to have been instantiated. It is important to understand that constraints act upon various slots in schemas, narrowing the number of possible values a slot may take.

A schema may then be linked with other schemas to form a schemata. A schemata at a higher level is defined in terms of those below it. The system is thus hierarchical. Presumably, the dependence that a schemata has in terms of lower level constituents stops when there are schemas assigned to unique perceptual events. It follows that something is comprehended in terms of its major constituents without referring to all possible minor subschemas.

A major role of schematas (see p. 69 for an explanation of this plural form) in comprehension is prediction. In relation to perception Neisser (1976) writes,

> A schema is that portion of the entire perceptual cycle which is internal to the perceiver, modifiable by experience, and somehow specific to what is being perceived. The schema accepts information as it becomes available at sensory surfaces and is changed by that information; it directs movements and exploratory activities that make more information available, by which it is further modified. (p. 54)[1]

Using cues from the environment learners begin to select a schemata that best accounts for incoming information. They check to verify whether a predicted schemata is applicable or must be altered. The schemata is adjusted or changed until all input information can be accounted for. Then, it is said, comprehension has occurred.

This process, of necessity, must be interactive; "required is a process which allows for the convergence of information so that information derived directly from the input can be combined with expectations to lead (more or less directly) to plausible candidate schemata." (Rumelhart & Ortony, 1977). Bottom-up processing occurs as schemas are built from incoming data. Top-down processing

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[1] From COGNITION AND REALITY: PRINCIPLES AND IMPLICATIONS OF COGNITIVE PSYCHOLOGY by Ulric Neisser. W. H. Freeman and Company. Copyright © 1976.

occurs as conceptual expectations are confirmed or disconfirmed in the input data.

Schemata are equally useful in retrieving information from memory once it is stored, and what is stored is not the direct input but the schemata instantiated by learners. After a time, these memory traces dim. Recall is then possible by using remaining fragments of an originally instantiated and/or accommodated schemata to reconstruct the original situation. What is remembered is not the direct input, but learners' interpretations of it. Learners may have applied a particular schemata depending on the context. Thus retrieval is not always possible if available cues differ sharply from those in the original learning setting.

Finally, schemata are used to make inferences. Schemata involve relationships that commonly exist among concepts. Sometimes slots in schemata are not actualized in the text. Learners simply infer missing values, known as defaults, based on their common knowledge of such schemata.

In order to perform these three functions—prediction, recall, and inferencing—the ability to acquire and modify schemata must also be explained. Presently this point is a primary problem for schema theorists and one over which there is some disagreement. Two mechanisms that help to explain how schemata are acquired or modified are schema specialization and schema generalization. Rumelhart and Ortony (1977) state that specialization occurs when one or more variables in a schema is fixed to form a less abstract schema. Specialization like this occurs in relation to schema frequency and utility. Schema generalization is just the opposite. Some fixed portion of an old schema is replaced with a new variable that allows a more abstract schema to evolve.

Spiro (1977) in his State of Schema Approach postulates what he calls low and high integrity processing. When learners employ high integrity processing, they attempt to recall as much of the input data as possible; in low integrity processing, instead of remembering discourse solely as a separate entity, knowledge is updated. Spiro sees low integrity processing as more representative of actual reading situations. In experimental settings, when learners are asked to recall as much as possible about a passage, high integrity processing is employed.

Schema theory has had a strong influence on new reading process theories, occurring as these theories have moved away from a recoding view. New theories view reading as gaining meaning from print; this view establishes the primacy of comprehension to the reading process. Schema theory has then offered reading theorists a metaphor useful in explaining the interactions that occur between readers and texts.

Schema theory, to date, has not been widely applied to the writing process. Bruce, Collins, Rubin, and Gentner (1978) have completed one of the few papers attempting to explore questions about the writing process from a cognitive science standpoint. These researchers believe that cognitive science suggests three perspectives on writing:

1. Writing is a communicative act, not just one of transporting ideas from the mind to print. Writers discover ideas during the process of putting words on

paper. Nor is the meaning obtained by potential readers a static reproduction of text. As a result, writers must be constantly attuned to how potential readers may interpret their intended meaning.

2. Writing is part of a taxonomy of different language acts. Of particular importance here is the relationship between children's oral language experiences and writing. Bruce et al. see differences between children's use of oral and written language falling into differences between the communicative media and the communicative messages. Rather than focus on the linguistic knowledge children bring from their oral language to writing, Bruce et al. believe it is more important to explore the differences between oral language and writing. While differences may exist between the products of oral and written language, this may be an incorrect focus. Instead, one might argue, researchers should focus on discovering commonalities between the processes that might in turn lead to a more acceptable general theory of language. Differences in products could then be examined as matters of degree and not kind.

3. Writing may be decomposed into various subprocesses including discovering and manipulating ideas and generating text at different structural levels. While Bruce et al. (1978) raise many interesting questions and state that the subprocesses of writing may occur simultaneously and interactively, they never really escape a linear view of the writing process. Note their "good" procedure for text production:

1. Create a detailed outline of the text structure.
2. Apply text-level editing operators.
3. Create a semi-text with all the ideas included in paragraphs, but not in finished sentences.
4. Apply paragraph-level editing operators.
5. Create finished text.
6. Apply sentence-level editing operators. (p. 34)

Schema theory also seems related to recent work in writing stemming from applications of Piaget. It should be noted, however, that while there are many similarities between the work of schema theorists and Piaget, important differences also exist (Nelson, 1977; Ortony, 1980; Scardamalia, Bereiter & McDonald, 1977; Stein, 1978). All believe schemas are hierarchically arranged mental structures and that learning takes place through changes in them. Piaget referred to these changes as assimilation, accommodation, and equilibration. Schema theorists believe in these processes generally, but not all agree that both assimilation and accommodation occur (Neisser, 1976). Schematas are thought to grow from the general to the precise, the personal to the impersonal, and the context dependent to the context independent. In both theories experience and manipulation of objects is thought to play an important role in such growth. Children come into the world, not as blank slates, but wired with capacities for thought and language. The learning process, according to both theories, is continual and what is learned at one stage must necessarily be carried on to the next.

Important distinctions between schema theorists and Piagetians do exist, however. Piaget's views have been interpreted to mean that major growth in schematas have a biological/genetic base. For example, adolescents are believed to develop the capacity for formal operations of thinking between the ages 12 and 15. Schema theorists, on the other hand, do not take so strong a view and see experience, i.e., accumulated prior knowledge, as central to explaining differences between adult and child thought. They would argue that these differences are really characteristic of all persons' learning processes regardless of age when they are faced with new phenomena.

More explicitly, schema theorists assert that all persons' learning, not just that of children, is more context bound in the beginning and, as experience accrues, needs less context. Thus, children develop more schematas through interaction with their environment. At first these experiences are context dependent to allow children to build storehouses of relevant background information. After this knowledge is acquired, children become less context dependent and can make necessary inferences based on past experiences.

Differences between the views of Piaget and schema theorists are important to the field of writing because of recent interest in egocentrism as a facet of student writing. Young children and poorer older writers are thought to be egocentric because they do not pay enough attention to the needs of their readers. A study by Scardamalia, Bereiter, and McDonald (1977), who found egocentrism in children's writing a circular concept, suggests different interpretations indicative of a perspective more in tune with schema theorists. By studying different age groups under differing experimental conditions, Scardamalia et al. were able to investigate the influence of role-playing information on children's writing. They found that exposure to a video tape of role players allowed young children to expand their writing to include more necessary detail for readers, while in older children the effect was the opposite. Older children were able to use the information to tighten their explanations and to delete irrelevant information. The difference, then, was not simply that the younger children wrote shorter themes because they were egocentric. Indeed, when supplied with relevant background information to better understand how others would react to their directions, they were capable of altering their texts, showing sensitivity to such needs. Older children's themes were not simply longer because they were less egocentric. In fact, when shown video tapes, they altered their texts to make them shorter. Thus egocentrism seems to be a concept that, as presently applied in writing research, limits the ability to ask more insightful questions.

The Contextualists

Classical accounts of how linguistic symbols give rise to meaning deal with individual words and their referents; individual words are thought to carry meaning. However, contextualists argue that the meaning of a sentence is not a sum of its individual words nor do persons identify objects in isolation. Instead, objects are perceived in relation to their role in events.

Bransford and McCarrell. Bransford and McCarrell (1974) state that "comprehension results only when the comprehender has sufficient alinguistic infor-

mation to use the cues specified in linguistic input to create some semantic content that allows him to understand" (p. 264). A series of experiments by Bransford and Johnson (1975) illustrate this point. For example, in one experiment subjects were given a passage concerning a young man's use of balloons to serenade a young woman living in a high-rise apartment. Upon hearing the passage with no context provided, subjects could remember little of it. They had no schematas on which to hook this linguistic input. In another condition subjects were shown a picture before hearing the passage. After the reading, subjects could remember the passage easily: the picture enabled them to activate appropriate background knowledge to use in interpreting the passage. Other experiments involved the same type of procedure and passages, except that titles instead of pictures were manipulated.

Bransford and McCarrell's work suggests that comprehension occurs only when readers can access background knowledge (schematas) that can be used to make sense of input. Cues as to what schematas to apply come from a wide view of contextual cues.

Halliday: Language as social semiotic. Besides cohesion, Halliday (1978) has been interested in the context of language and its relation to comprehension. Deciding whether an instance of language is a text is not just a matter of examining it for internal cohesion. External factors related to the context in which the language is found must also be considered. An instance of language may be cohesive but not have any real correspondence to events in the world. Likewise a language instance may correspond to a real situation but have no cohesion in the linguistic surface structure. External as well as internal factors affect the linguistic choices that speakers or writers make in producing a text. Halliday divides these factors within the context of situation into three areas: field, tenor, and mode. "Field" is the total event of which the text is a part, together with the purposive activity of speakers or writers; it therefore includes the subject matter of the text chosen from the total context of situation in relation to language users' purposes. "Mode" refers to the function of the text within the context of situation and includes both channel (spoken or written) and rhetorical mode (narrative, persuasive, etc.). "Tenor" refers to the role relationships that exist between participants in the context; therefore it includes not only audience but all ramifications of speaker/writers' relationships to their audiences.

From the total context of situation, speaker/writers make choices of field, tenor, and mode. Together these form "register." "A register can be defined as the configuration of semantic resources that the member of a culture typically associates with a situation type. It is the meaning potential that is accessible in a given social context" (p. 111). It must be emphasized that register is an abstract concept used to describe the semiotic structures of the situation. Register is not something found directly in the graphic display; it is realized linguistically through the semantic choices made by speaker/writers. The semiotic feature of field corresponds to the ideational component of language; tenor, to the interpersonal; and mode, to the textual.

Halliday believes it is easiest to view influence of the context of situation on the idealized linguistic functions of language used by young children. For young

children the semiotic features of language can be realized as seven functions: instrumental, regulatory, interactional, personal, heuristic, imaginative, and representational. As children mature they are able to use language to serve more than one function at a time; as a result the seven basic functions merge into the three macrofunctions of ideational, interpersonal, and textual.

Halliday has developed these notions to explain spoken or written discourse production. However, if reading and listening are viewed as constructive language processes, what occurs in comprehending a text can be explained in the same way. From cues in the print setting, readers make predictions about the semiotic features of field, tenor, and mode communicated by the writer. These predictions lead readers to anticipate certain language in a text. Thus, in reading, predictions are confirmed or disconfirmed and readers led to assimilate or accommodate information into their constructed views of the semiotic situation the writer wants to share.

Consensus of contextualists. In sum, the language research of the "contextualists" signals change from a focus on the phonological and grammatical aspects of language, to emphasis on its semantic base. The notion that the word or even the sentence is the basic unit of meaning is rejected. Instead, it would seem words have meaning only in relation to each other as they encode a certain context of situation. Ability to decode and remember the potential meaning of a text is dependent on the schematas language users already have available. These schematas allow them to make predictions that act to guide perception. Predictions are confirmed or disconfirmed and new information assimilated with what is already known or accommodated to form new schematas.

Recent language research has played a major role in the development of theories of reading. Goodman's (1967, 1978) theory is the first to place an emphasis on meaning through the interrelated use of the language systems rather than on recoding as reading. Adams and Collins' (1979) theory is the first to use schema theory in explaining the reading process. While Adams and Collins postulate an interpretive level beyond the graphophonic, syntactic, and semantic, it is de Beaugrande (1978, 1980) whose theory explores other levels of language incorporating recent developments in a wide range of fields. Finally Eco's (1979) theory of reading suggests how reading relates to social context and must be regarded as a constructive, semiotic process.

Theories of Reading

Process Theories

Goodman model of the reading process. Goodman's theory of reading (1967, 1978) has developed from his interest in examining reader miscues for evidence of interrelated use of the three language systems—graphophonic, syntactic, and semantic. Goodman views errors made while reading aloud as windows to the actual mental processing occurring during reading. He calls these deviations from the text *miscues* rather than *errors* to signal their existence as normal to the process. Earlier editions of the theory reflect the heavy influence of transformational grammar on the model. The system was based on the sentence;

most crucial was whether a miscue resulted in meaning change, i.e., the misinterpretation of the deep structure of a sentence. The most recent edition of the model, however, takes into account the need for the theory to fit within recent developments in language research. It is this version of the model that is reviewed below (Goodman, 1978; also see Akural, 1979).

Goodman views reading as a process in which information is dealt with and meaning constructed continuously. The process that readers engage in is the same regardless of age; proficiency can exist at every level. Readers are proficient if they are both efficient and effective:

> They are effective in constructing a meaning which they can assimilate or accommodate and which bears some level of agreement with the original meaning of the author. And readers are efficient in using the least amount of effort to achieve effectiveness. To accomplish this efficiency, readers maintain constant focus on constructing the meaning throughout the process, always seeking the most direct path to meaning, always using strategies for reducing uncertainty, always being selective about the use of the cues available and drawing deeply on prior conceptual and linguistic competence. Efficient readers minimize dependence on visual detail. (1978, p. 2-1)

The degree to which readers may be efficient and effective is largely dependent on the background knowledge they bring to particular reading tasks. Reading must be seen in relation to the whole social context of people's lives.

Goodman views reading as involving four "cycles"—optical, perception, syntactic, and meaning—which readers employ more or less sequentially. Readers' focus, however, is not on each cycle, but instead on meaning as the cycles melt into one another. As readers move through the four cycles, they employ five processing strategies: recognition-initiation, prediction, confirmation, correction, and termination. Miscues are overt reflections of these five processing strategies at work. In fact, miscues exist at all levels of proficiency. They must if readers are to process print fast enough to overcome short-term memory limitations, and to play an active semantic role.

Goodman describes his revised model in terms of cycles, inputs, and outputs. Reading begins when readers recognize a task as calling for reading. Inputs at this point are the graphic display and cues within the environment that signal the activation of relevant memory strategies. The output here is the beginning of the optical cycle. Basically, the outputs of each cycle guide the prediction of inputs useful in completing the next cycle of the process. The optical cycle outputs cues for image formation to be used in the perception cycle. These cues guide the way readers sample the text during the perception cycle. Readers then compare the image from the text with their prior expectations. If their predictions concerning the image are confirmed, they move to the syntactic cycle. Here the input is confronted by rules developed in memory for relating the surface display to the internal surface structure. If readers' predictions are confirmed, outputs are predictions concerning the graphic, semantic, and syntactic features of the text and movement to the meaning cycle. Inputs to this cycle are stored experiences, conceptual constructs, and the lexicon. If predictions from these inputs are confirmed, i.e., an acceptable meaning is found, this information is assimilated or accommodated and meaning of the text constructed by readers.

While Goodman states that his model must be applicable to "all characteristics of semantic systems: propositional structures, idioms and metaphors, pragmatics, functions, cohesion, and inference" (1978, pp. 12-13), neither the exact nature of these characteristics nor how they relate to the process of reading is spelled out. Only as language research expands will knowledge begin to emerge about these areas of the semantic system that can be related to the reading process. The other models to be reviewed reflect this movement. While these newer models better articulate elements of the semantic system and their relations to contextual environments in which reading occurs, the Goodman model best articulates the processing strategies used by readers and includes a research methodology that has been applied by Goodman and others to confirm hypotheses stemming from the theory.

Adams and Collins' schema-theoretic view of the reading process. Using insights from schema theory, Adams and Collins (1979) have developed a theory that reading and reading comprehension are synonymous.

> what we really mean by reading is not the ability to decode words but the ability to extract the meaning, both explicit and implicit, from the written text. It depends on the intricate coordination of our visual, linguistic, and conceptual information-processing systems. (p. 1)[1]

To review, schema theory rests on an assumption that persons are intelligent beings who use knowledge to guide actions in the environment. Ability to use this knowledge may be constrained by implicit or explicit social norms. However, within the limits of these constraints, persons use problem solving to guide motivations and actions. Knowledge is ordered hierarchically in the mind: as one moves down the hierarchy of a schemata, the number of embedded schemas multiplies while the scope of each narrows, until, at the bottom-most level, the schemas apply to unique perceptual events. At any one time the processing capacity of the system is limited and there exists a central omniscient processor that allocates resources of the system. The theory assumes the primary function of language is communication. Reading is then viewed as a constructive language process with schema theory providing a structure powerful enough to explain the interactions among different levels of processing.

Briefly, then, from a schema-theoretic view, the reading process can be described as follows. Both top-down and bottom-up schematic processing occur simultaneously. Incoming visual stimuli are organized into letters, the next level of schemas. These in turn are organized into words, words into syntactic units, syntactic units into underlying semantic propositions. At the same time bottom-up processing suggests the activation of schemas from higher levels, higher level schemas that have been activated are searching for elements among incoming data to fill in their empty slots. This process may be thought of as hypothesis testing or prediction. The system is constrained from both directions: (a) incoming data activate only a limited number of schematas, (b) the higher level schematas activated anticipate and interpret new incoming data in ways that most consistently resolve ambiguities between possible interpretations.

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[1] From "A Schema-Theoretic View of Reading" by M. J. Adams and A. Collins, in R. O. Freedle (Ed.), *New Directions in Discourse Processing* (Vol. 2). Copyright 1979 by Ablex Publishing Company. Reprinted by permission.

Thus reading depends on readers' ability to appropriately interrelate knowledge and textual information both within and between levels of analysis. Breakdowns in reading comprehension occur for two reasons.

1. More common are memory data limits. Persons have no knowledge available to make a text meaningful (even at a minimum level).
2. To work properly some balance (not fully explained) must exist between bottom-to-top and top-to-bottom schematic processing.

But Adams and Collins state: "when activities subserving the same end compete for attention, resource limited problems may occur. If respective demands cannot be met, the comprehension process breaks down" (p. 7). For example, if much effort must be allocated to constructing words from the visual display (because they are unfamiliar), the system may overload and an appropriate meaning will not be attached to a phrase. The degree of resource and memory limits that may be tolerated and comprehension still result depends on the difficulty level of the material or reasons for reading it (which set comprehension goals or limits, so to speak).

Adams and Collins' theory is weakest at the descriptive level stratum because none of the terms in the theory have adequate operational definitions. Few suggestions are made by Adams and Collins in regard to methodological considerations that might aid in designing specific experiments to prove or disprove the theory. The researchers are most clear, because of work previously done by Adams, on ways to research letter-word schemas. To research the theory at the syntactic level the two suggest use of an augmented transition network for analytic purposes but go no further. They are weakest in their suggestions for research on the semantic and interpretive levels of the theory. At the semantic level they suggest one would need to determine the world-knowledge schemata required for a text and default assumptions to be made. At the interpretive level one would determine the event structure and knowledge structure of the passage as a whole which would result in optimum comprehension. No direct suggestions about how to determine any of these are given nor how such determinations could lead to proof of the theory. For instance, knowing the semantic and interpretive factors that are in the text, how does one examine a reader's ability to unlock such information?

While Adams and Collins have been working to extend reading theory via schema theory, other researchers have been considering additional extensions. These are raised in the form of issues it is believed new theories must address. Harste and Burke (1978) argue that not only a psycholinguistic but a sociolinguistic perspective must be taken toward reading. Indeed, psycholinguistics has made reading researchers more aware of readers' contributions to meaning; however, at issue still is how readers develop such linguistic and cognitive knowledge and how they know which to apply in a given setting.

Louise Rosenblatt in her recent book *The Reader, the Text, the Poem* (1978) explores from a literary standpoint a second important extension. She develops the notion of transaction, or ongoing comprehension. Carey and Harste (in press) further elaborate on this view.

De Beaugrande's Text World Model of Reading. Two strengths of de Beaugrande's Text World Model of Reading (1978, 1980) over Adams and Collins' model are immediately apparent. For one, de Beaugrande achieves a higher level of specificity than Adams and Collins, especially in relation to the defining of terms. Second, de Beaugrande has performed research and suggests additional studies that could possibly prove the adequacy of his theory. In doing so, his theory is developed at the descriptive level far more satisfactorily than that of Adams and Collins.

De Beaugrande defines text as "meaningful configurations of language intended to communicate" (1980, p. 1). Having chosen this definition, his interest is in the study of samples of discourse longer than those language researchers traditionally used in the past. More importantly, his definition suggests a movement toward and interest in the utilization processes of language rather than in deep structures. Therefore, de Beaugrande argues for the study of natural language rather than contrived text.

De Beaugrande further defines text in terms of seven characteristics of textuality:

1. Cohesion. Like Halliday and Hasan, de Beaugrande views cohesion as the organization of language into a sequence such that underlying semantic relationships are recoverable.

2. Coherence. Coherence refers to the reasonability and clarity of the semantic edifice of the text.

3. Intentionality. This characteristic refers to the degree to which a writer intends a text to be both cohesive and coherent.

4. Acceptability. This characteristic refers to the extent a writer believes readers will regard a language entity as an acceptable text.

5. Situationality. This characteristic refers to the factors that make the meaning of a text recoverable in relation to some context of situation.

6. Intertextuality. This characteristic refers to the relationship that exists between a given text and the texts encountered in prior experiences.

7. Informativity. This characteristic refers to relative uncertainty readers may experience as to which possible text meaning to select when several are available. Choices are narrowed by taking into consideration interactions with the other six characteristics of textuality.

A language entity that possesses textuality, i.e., has these seven characteristics, becomes a cybernetic system. Out of all the meanings each individual word could assume, the one that is actualized is that which best fits in relation to the others. That readers can produce "exactly" the same meaning intended by a writer is not possible, but it is equally untrue that readers can assign a text an infinite variety of meanings. The meaning of a text is "a probabilistic entity whose ultimate details of format are only partially decidable" (1978, p. 4).

De Beaugrande defines reading as "building a model of a textual world" (1978, p. 6). He believes readers convert surface structures to formats. These formats do not match the levels of language which are linguistic descriptors; instead, the

formats are psychological descriptors of the way incoming information is processed and stored. The formats he identifies are: linearization programs, shallow structures, conceptual-relational structures, text-world model, macro-structures, world-knowledge correlate, schema, and script.

While de Beaugrande lists these formats in a bottom-to-top manner, he believes they work interactively. In this sense, reading involves reliance on and generation of conceptual dependency relationships:

> surface texts are replete with signals which generate hypotheses about how the meaningful concepts underlying the text depend upon each other. . . . Now, these signals are by no means determinate in giving a one-to-one match with concepts. They are more often several-to-several, with some matches being more probable or preferable to others. To constrain the range of possibilities, people will be likely to use cues in parallel. . . . Successful hypotheses are channeled back to the formation of new or more general ones. (1978, p. 7)

Thus, readers do not hold in mind all possible meanings of each word. Instead, hypotheses are made about the meanings that could be most relevant, and these hypotheses are confirmed or rejected by how they fit within the conceptual dependency system being formed by readers. Efficiency becomes important; readers always attempt to process the largest amounts with the smallest expenditure of resources.

Readers create text-world models which de Beaugrande defines as "the cognitive correlate of the knowledge conveyed and activated by a text in use" (1980, p. 24). As such, they exist only in the minds of readers. These text-world models are not, however, what becomes stored in memory. Indeed, they decay with time, leaving an interactive set of knowledge spaces that are searched during recall for elements that would contribute to a coherent reconstruction of the text. To explain discrepancies between text recalls and readers' text-world models, de Beaugrande offers six theses:

1. "Text-presented elements are privileged in storage and recall if they match stored world-knowledge patterns" (1980, p. 321). This thesis means that readers are more likely to remember text meanings if they match information readers already have stored in memory.

2. "Text-presented elements are privileged if they are attachable to major nodes and links of a global stored knowledge pattern, such as a frame or schema" (1980, p. 132).

3. "Text-presented elements are altered to produce a better match with world-knowledge" (1980, p. 232). In recalling texts, readers must reconstruct their text-world models from incomplete sets of stored knowledge spaces. To do so, they must make inferences and assumptions consistent with their stored world knowledge. As a result, recalls that are constructed may fit in with a reader's sense of the world better than with the actual text.

4. "Text-presented elements become conflated or confused because they are closely related in world-knowledge" (1980, p. 232). In creating a text-world model, readers must often make inferences and default assumptions. These are made by using stored prior world knowledge. This knowledge, however, may not

match exactly what the writer had in mind. Thus the text-world model created by readers and later recalled may be confused.

5. "Text-presented elements decay and become unrecoverable if they are neutral or accidental in world-knowledge" (1980, p. 233). Language users have alternate ways of expressing the same meaning. As a result, in recalls, readers may use one of the alternatives, choosing a level of specificity they deem applicable.

6. "Text-presented entries become indistinguishable from inferences and spreading activations on the text receiver's part" (1980, p. 233). After a time readers are unable to distinguish between the information presented in a text and that which was an addition from their own store of world knowledge.

In summary, de Beaugrande believes that if larger units of text are explored, requiring deeper levels of processing than the sentence, a set of language universals may be found. He feels these universals will be quite different from those presently looked for by linguists. Underlying reading, as well as the other language systems, he sees such language universals as,

> PROBLEM-SOLVING capacities;
>
> PLANNING capacities;
>
> capacities for INFERRING the problem-solving and planning activities of other people;
>
> capacities for GENERATING, TESTING, AND REVISING HYPOTHESES about current input and its relevance to larger contexts;
>
> processing EASE for expected or probable output and input;
>
> processing DEPTH for non-expected or improbable output and input;
>
> processing LIMITATIONS regarding COMPLEXITY;
>
> processing strategies for REDUCING COMPLEXITY;
>
> capacities for selective FOCUS OF ATTENTION;
>
> capacities for maintaining CONTINUITY OF EXPERIENCE. (1980, pp. 125-126)[1]

Eco: The role of the reader. Traditionally, reading is described as a receptive language process. Eco (1979), a semiotician, challenges this view. He argues that in terms of a theory of reading, texts have meaning only in relation to what readers produce. Meaning is not in the text; it is created by readers during and from reading. A text itself is capable of unlimited semiosis. Only to the extent that readers agree to be receptive to the sense probably intended by the writer, does text take on a certain meaning. In other words, readers agree to use codes and subcodes common to both the writer and themselves. All agree to take part in a communicative event.

Eco further differentiates between what he calls open and closed texts. Open texts are intentionally created by writers to invite a variety of interpretations; much

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[1] From *Text, Discourse, and Process: Toward a Multidisciplinary Science of Texts* by R. de Beaugrande. Copyright 1980 by Ablex Publishing Company. Reprinted by permission.

poetry would be a good example. Closed texts, on the other hand, create only one system of meaning, and only one set of possible semantic interpretations holds. In an open text, several sets may be equally valid. Eco states,

> The type of cooperation requested of the reader, the flexibility of the text in validating (or at least in not contradicting) the widest possible range of interpretative proposals—all this characterizes narrative structures as more or less 'open.' (p. 33)

Having taken a view of reading as the production of meaning, Eco must account for the types of knowledge readers bring to texts and how they use this knowledge to create meaning. In doing so, Eco more than any other theorist relates the reading process to social context in terms of both the codes developed by the reader, as a member of a social milieu and the situation in which the act of reading occurs.

Eco explains the reading process as illustrated by Figure 2.7. Two divisions within this diagram are important.

1. The boxes below the actualized content represent the reader, and those above, the meaning produced, i.e., comprehension. Readers use their perception of the linear text manifestations, their knowledge of codes and subcodes, and circumstances of the utterance, to produce a meaning of the text.

2. There is a second division in the diagram between intentions and extensions. All intentions can be confirmed or disconfirmed by items in the linear text manifestation. Extensions, however, cannot be directly confirmed. Instead, they represent knowledge brought by readers to the text, and are only confirmed in that such information contains valid assumptions within the matrix of interpretation being woven.

More explicitly, in reading a text, the following occurs. Readers apply to the linear text manifestation a given code, or system of codes and subcodes. Potential meanings are detected for lexical items but not yet actualized because readers do not know which dictionary entries to apply. These decisions are made only with the help of further amalgamation, and textual operators. At an abstract level, readers then predict possibilities of meeting given terms with other terms belonging to the same semiotic system (contextual selections), or of possible co-occurrence of a given term with external circumstances (circumstantial selection). Also looked for are overcodings, meaning various literary conventions. Readers then evoke common frames, or intertextual frames, both of which can be thought of as schema types. Common frames come to readers from their storehouse of general knowledge about life, while intertextual frames are literary "topoi," narrative schemes. Finally, at this level, readers may apply ideological overcoding, which may be thought of as a personal perspective on the world, to the point of being a bias at times.

Once readers have applied codes and subcodes to the linear text manifestation, they begin to implement semantic disclosures. In other words, among possible encyclopedic entries, those to be actually realized are selected. "Semantic disclosures have a double role: they blow up certain properties (making them textually relevant or pertinent) and narcotize some others" (1979, p. 23). Deci-

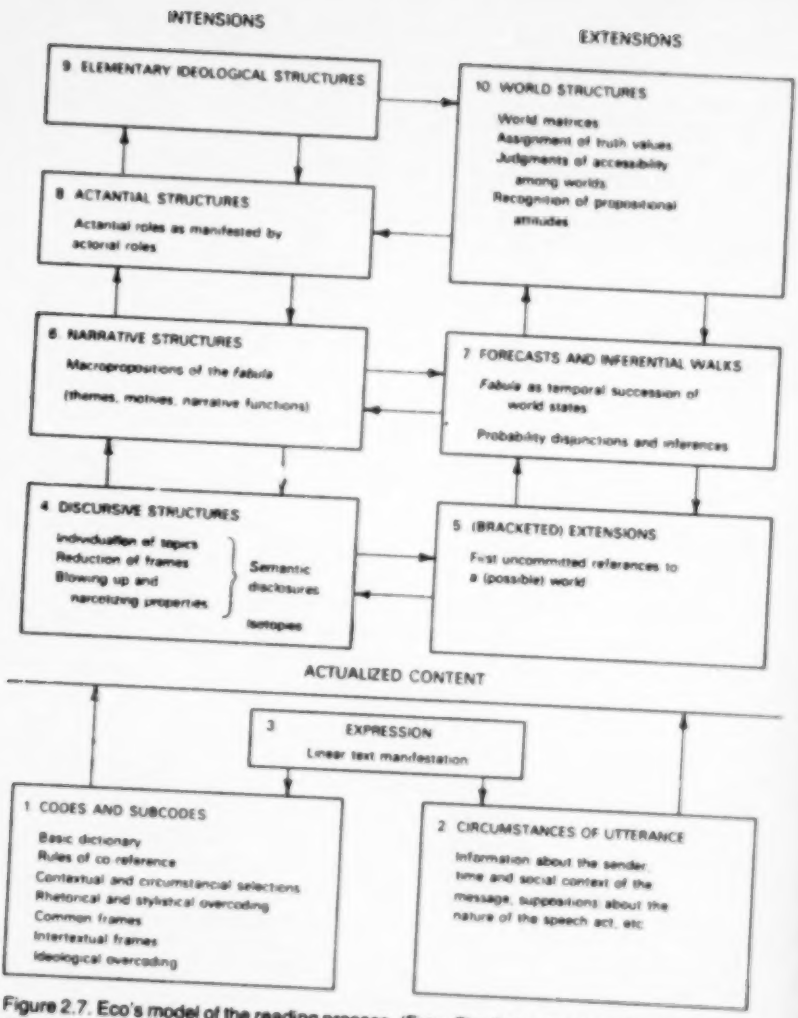

Figure 2.7. Eco's model of the reading process. (From *The Role of the Reader* by Umberto Eco. Copyright 1979 by Indiana University Press. Reprinted by permission.)

sions about semantic disclosures cannot be completed without a determination of topics and isotopics.

Once readers have made semantic disclosures, i.e., actualized the discursive level, they can determine the narrative structure of the text. Eco uses "narrative" in a somewhat different way here. He states,

> we can assume a more flexible notion of story (not so dissimilar from the one proposed by Aristotle's *Poetics*) in which it is enough to isolate an agent (no

> matter whether human or not), an initial state, a series of time-oriented changes with their causes, a final (even intransitorily so) result. In this sense there is a story even in the chemical description given by Pierce about the production of lithium. (p. 30)[1]

This determination of the narrative structure, or fabula, is developed by the reader, and represents a macrostructure. Eco makes clear that he does not believe this macrostructure must constitute a synthesis of micropropositions. He points out that many times the macropropositions expand the discursive structures.

The reader decides upon a fabula, or level of abstraction, which is made up of macropropositions. This fabula, or overall interpretation, is not produced until after the text has been read, making it the result of a continuous series of abductions made during the course of reading. "To wonder about the next step of a given story means to face a state of disjunction of probabilities" (p. 31). This means readers must make forecasts and inferences. In open texts, writers intentionally plan for readers to be able to apply a wide number of fabula, and it follows a number of equally probable forecasts and inferences. In closed texts, however, the writer offers "continual occasions for forecasting, but at each further step he reasserts, so to speak, the rights of his own text, saying without ambiguity what has to be taken as 'true' in his fictional world. Typical from this point of view are detective novels" (p. 34). Finally, deeper levels of processing occur where readers must compare structures and ideologies manifested in the text, i.e., possible worlds to their own knowledge of the world.

In summary, one sees from a discussion of the above reading theories, certain characteristics and trends of reading research. Beginning with Goodman there has been movement toward the consideration of reading as process, focusing on gaining meaning from print. Single theories have been offered to explain the process at all levels of development. This focus on reading as comprehending has in turn led researchers to a greater and greater interest in readers' contributions to determining the meaning of text. Research has suggested readers' interpretations of meaning depend on the function and use of text within a language setting. A consideration of language in use has led researchers to consider the influence of wider and wider contextual variables. As a result, research is now becoming more and more multidisciplinary. One sees in the development of reading theories a progression from exploratory research, to the development of new theories, to the conducting of research guided by theory and finally to further theory refinement.

If one is to examine anew the relationships between reading and writing, it is important to examine the field of writing, as well as reading, for recent developments. Developments in the field of writing have not been as strongly or articulately influenced by recent developments in language research. Traditionally reading research has always been closely associated with linguistics and psychology. The field of writing, on the other hand, has had a much more insular

[1] From *The Role of the Reader* by U. Eco. Copyright 1979 by Indiana University Press. Reprinted by permission.

history. At issue even today is the degree to which writing researchers and educators ought to borrow from, be influenced by, and support writing research in outside disciplines. More than reading, writing has been considered a creative art form incapable of explanation. The history of reading could more likely be characterized as the opposite; reading was the recoding of meaning and its storage in memory. Only recently has it been suggested that reading is a unique creative act.

Additionally, because of the closer relationship of reading to scientific methodology, it has long been acceptable to pursue research into the process itself, separate of instructional concerns. In both writing research and theory, a concern for instruction has, until very recently, characterized most efforts: a good theory of writing was defined, in essence, as the basis of a good theory of instruction.

In a recent article, Park (1979) elaborated on this problem. He challenges "the current expectation that theory will serve pedagogy, in direct, immediate ways" (p. 48). What current research highlights is the complexity of the writing process. Park argues that at any one time expectations of improving students' writing should be, at most, modest. But instead, "our expectations for theory probably show up best in the almost universal notion that theories about composition should be experimentally tested in practice, as if their worth depended largely on their ability to improve writing within the confines of a single course" (p. 53).

A body of research that relates to each of the four reading theories discussed above was not cited. This was because each theory, as presented, suggests how such research can be traced. In the field of writing, however, the relationship between theory and research is not always so neatly linked. To illustrate the many conclusions, we will trace briefly trends in writing research over the past 20 years then elaborate on recent theories of writing. Very recent research studies of the writing process are not reviewed at this point. This decision was made to avoid repetition since these studies are discussed at some length in Chapter IV concerning how they lend support, or refute, the new theory of writing proposed in the next chapter.

A Brief Review of Writing Research

Chomsky's 1957 book, *Syntactic Structures*, made it possible for language researchers to move away from efforts based on taxonomic grammars and associative learning theories of language acquisition. During the 1960s, the result of this revolution in the field of writing was a proliferation of developmental studies focusing primarily on syntax (Hunt, 1965; Loban, 1976; O'Donnell, Griffin, & Norris, 1967; Stewart, 1978b). The emphasis was on emerging competence as measured by children's growing control over and sophistication about the surface structure of written language. The importance of the functions of language, or the role of social interaction, were not considered important factors in this new research.

Subsequently, Mellon (1969) and O'Hare (1971) investigated whether sentence-combining exercises could be used to speed up students' syntactic

development. Typically, in studies of this kind, pretest writing samples were analyzed using several language indices, especially the T-unit developed by Hunt, and general ratings by outside raters. This procedure was again followed to gather post-test data. Both Mellon and O'Hare took into account the importance of controlling for mode. While these two researchers realized that the mode of student writing could affect the syntactic structures children produce, they did not investigate or suggest that others research the use of mode as a means of fostering language development. Further studies investigating the effects of sentence combining have abounded (Stotsky, 1975).

Recent studies by San Jose (1972) and Perron (1977, 1979) have suggested a more complex relationship between syntax and children's language development. That mode could have an effect on the syntactic maturity demonstrated by students was shown by both researchers. San Jose and Perron defined mode as one of three basic types—narration, exposition, or argumentation. It seemed to possess elements of both language function and form, and to be semantically tied to the writing situation. Neither researcher at the time, however, was very successful in clarifying these points.

Work done about the same time by sociolinguists and British educators shed further light on the relationship between semantics, syntactics, and children's writing development. Britton, Burgess, Martin, McLeod, and Rosen (1975), in their study of 2,200 writing samples from British school children 11-18, looked at the effects of audience and language function on writing development. Britton et al. found that nine-tenths of the scripts were put in the audience categories of teacher-learner dialogue, and "pupil to examiner." For 18-year-olds, while there was some extension into the higher transactional categories (speculative and tautologic), the landslide was into the analogic, principally at the expense of writing in the poetic. Little writing was found at any level in the expressive mode. Britton found this disappointing because he believed that expressive writing represented writers' closest link with oral language and was the kind of writing best adapted to exploration and discovery of ideas.

Emig's study (1971) of the composing process of twelfth-graders also moved writing research into the consideration of new aspects. Unique about her study was the methodology she employed. She developed a theory of the writing process from audio tapes of students asked to compose aloud as they completed a written composition, and from tapes of interviews with the same students. From analyzing the verbal protocols she received, Emig was able to (a) develop an outline of steps actually used by students in their composing process, (b) classify students' writing as to most frequent modes and audiences, and (c) characterize the apparent influence on writing by teachers of composition.

Graves' (1975) dissertation pioneered the way for ethnographic studies of the writing process. It was Graves' belief that studies performed within school settings could help educators discover a variety of factors that influence children's writing processes and development. Graves explored the writing process, and related variables collected from a group of seven-year-old children in two different types of classrooms. In Phase One, the writing folders of 94 children were examined for thematic choice, writing frequency, and types of writing (assigned-

unassigned). In Phase Two, 14 children were selected from each classroom, and a writing episode recorded. In Phase Three, 17 students from each of the four classrooms were interviewed about their personal views of their own writing and concept of the "good writer." Finally, two students from each of the four classrooms were selected for in-depth case study. These students had been identified by teachers and administrators as representative of "normal" seven-year-old children.

Graves found students tended to write more in informal classrooms. Boys and girls seemed to choose different topics. Most children could be classified as one or the other of two types of writers: reactive or reflective. Case studies of writers suggested that, at least in an informal classroom, families and homes, teachers, peers, and the students' own developmental process affected their final written products.

Theories of Writing

Theories of writing over the past 20 years can be categorized into three types: traditional product models, process models, and process models influenced by reading theory. Additionally, in the field of writing, the term "rhetoric" is often used interchangeably with "writing." However, theories of rhetoric, especially if one keeps in mind their historical roots from Plato and Aristotle, are not theories of writing. Theories of rhetoric, and theories of discourse as well, apply traditionally to both speech and writing. While they frequently take into account many of the variables and questions that writers must address while engaged in the process, and describe written products in detail, they are not theories of the actual process of writing. Most clearly they describe invention and discourse products. For this reason, such theories as those formulated by Kinneavy, Jacobson, Burke, and Moffett are not reviewed.

Also, some "theories of writing" are really theories of instruction. The work of Macrorie, Murray, and Coles, for example, must be characterized as such. Certainly these men hold certain theoretical beliefs about the writing process that can be inferred from their books. However, they have not developed theories, as such, of writing nor do their instructional theories follow from them. Therefore, some possible candidates for theories of writing have been eliminated on these grounds.

Product Models

Product theories of writing: Baker, McCrimmon, Troyka, and Warriner. Four of the most popular product theories of writing are those created by Baker (1977), McCrimmon (1980), Troyka (1975), and Warriner (1979). Though each is slightly different, it is the markedly similar components, six in particular, of all product theories that are of interest.

First of all, as discussed in the previous section, there is no clear distinction in product theories between analysis of writing as a process, and analysis of written products or writing instruction. Indeed, in product theories, the only analysis of

the writing process is its result, i.e., the written product. In analyzing the product, major emphasis is put on the qualities and correctness of its form. Concern, then, centers on how to teach writers to complete such products when they have little knowledge or give little thought to the actual writing process.

Second, product theories propose a theory of writing whose goal, one can argue, is to develop proficient writers for school settings. As a result, emphasis is placed on the written forms most appropriate for school tasks. Themes are to begin with introductory paragraphs or theses, followed by bodies or middle sections that further expand upon the theses using a repertoire of patterns for paragraph development. Finally, themes should have endings or conclusions.

This emphasis seems to ignore the wide variety of other functions and forms writing may take, especially in non-school settings. Product theories tend to assume writers will make relevant transfers from academic writing to other settings. As a result, in product theories, writing does not arise from students' functional needs to communicate, but from the requirements of the week's assignment. For example, Warriner states, "Given at the rate of one every two weeks, these sixteen assignments would approximately fill the school year" (p. 36).

Third, in product theories, the writing process is described in terms of a linear series of steps. Each begins with a planning stage. Characteristic of the planning stage is: (a) the need to gather ideas for writing, (b) the need to pose a guiding thesis, and (c) the need to plan the development of one's thesis (often an outline). Much emphasis is placed on accomplishing each of these tasks before beginning to write. Product theories spend considerable time on ways of gathering ideas for writing so that writer's block can be avoided. However, one may question whether this problem exists to such an extent in natural settings where persons' desires to write arise out of real functional needs. While writers must have some general notion of ideas they want to communicate in order for writing to begin, planning principles of product theories strongly inhibit the use of writing as a means of discovery or learning. The discovery or learning must in large part be completed, i.e., outlined in its entirety, before beginning to write.

Fourth, product theories tend to place great emphasis on the paragraph, seeing it as a microcosm of the whole essay. Various methods of paragraph development are discussed, and illustrated by examples whose discourse functions are clear-cut. One problem, admitted by Baker (1977), is that the developmental pattern of all paragraphs is not so easily recognized, and functions may overlap. More importantly, when writers' texts develop out of functional needs, one questions whether the message can always be communicated in a single paragraph. However, in product theories, the paragraph must be mastered first, then writing a theme simply involves learning to string a series of well-written paragraphs together—a building block approach, if you will.

A fifth quality of product models is that explanations of error, and their relationship to experimentation and revision, are generally fuzzy. Warriner tends to view revision for the most part as proofreading. As for error, he states: "Whenever

possible, forestall errors or prevent their reoccurrence" (p. 35). Baker, Troyka, and McCrimmon seem more willing to acknowledge that error occurs and to place some importance on revision. However, all four theories emphasize the need for careful planning before beginning to write. For this reason, they tend to stifle experimentation during the writing process itself. It follows then, that since writing is discouraged as a means of discovering one's ideas, revision focuses more on syntactic and graphophonic aspects, rather than semantics, pragmatics, etc.

Finally, though solely an instructional characteristic, product theories tend to make extensive use of readings to provide students with exemplary models. While it may be true that reading and studying models contribute to writers' language data, the problem with such an approach is, again, often one of functional need. In most product theories, models are read, discussed, and students then asked to write themes duplicating these qualities. The impetus to consult a model does not, under these circumstances, arise from any context of real relevance to students.

In conclusion, product theories do not explain the writing process, only the form and a set of procedures writers may use to produce acceptable school writing. By really internalizing a product theory/formula, a student can rather safely produce writing that is correct—an important consideration when minimal competency testing is becoming the norm. But such a view also stifles the use of writing as a means of thinking and discovery, encourages writer's block, and inhibits experimentation with language. In the end, product theories may frequently produce writers who write well in academic settings, but who choose not to write otherwise. They have internalized few real purposes which writing can serve in the lives of literate persons.

Process Models

Young, Becker, Pike. Rhetoric: Discovery and change. Young, Becker, and Pike (1970) have developed a theory of rhetoric based on tagmemic theory. They argue that traditional rhetoric is no longer adequate, because it fails to include many ways in which language is used.

In traditional rhetoric, the art of invention provides forms for recalling current beliefs. Modern modes of inquiry, on the other hand, encourage the discovery of new relationships. In traditional rhetoric, the art of arrangement describes forms of persuasion but not for description, narration, and exposition, which are all important modes of modern expression. Also, the art of style emphasizes ways to embellish the final product without taking into account deeper roots embedded in the whole process of writers' choices.

While Young, Becker, and Pike use the term "rhetoric" and clearly perceive it as including spoken as well as written language, their theories of rhetoric and writing are virtually synonymous. They view rhetoric as being primarily concerned with the control of a process, characterized as follows:

> in spite of this blurring and merging of stages, the writer does at various times shift his attention from his experience and his own resources to his audience

> and to the written work itself; these shifts of attention and activity constitute the rhetorical process for the writer. (p. 9)[1]

Tagmemic theory makes several contributions to the development of this theory. According to tagmemics, a linguistic unit is well-defined only when three aspects of the unit are specified: its contrasting features, range of variation, and distribution in sequence and ordered classes. Such a view forces linguists to look for constraints beyond the sentence level, developing a hierarchy of perspectives as well as concepts. Borrowing from physics, Pike calls these particle, wave, and field.

Another belief in tagmemic theory is an etic-emic distinction. Etic refers to the external observations of the world made by either the writer or readers, and emic to internal systems. These beliefs from tagmemic theory are then applied to invention, arrangement, and style, three elements of traditional rhetoric.

Following from tagmemic theory, invention involves the whole of the inquiry process. This process can be broken down into four stages: (a) preparation, (b)incubation, (c) illumination, and (d) verification. During the period of preparation, writers first analyze and state their problems, defining elements of a given situation, and determining the exact unknown. Writers do this by applying heuristics developed from hierarchies of units and perspectives (see Figure 2.8). These heuristics allow writers to do two things: (a) "to retrieve a wide range of relevant information that the inquirer may have stored in his mind, and (2) to bring to his attention information about the unit that he does not possess but can usually acquire" (p. 130). In using heuristic procedures, writers are engaged in guided hypothesis testing.

Young, Becker, and Pike discuss arrangement in terms of the relationships between writers and readers. They state: "Whatever other purposes rhetoric may serve, it is fundamentally a means for achieving social cooperation: the writer's goal is to engage in some sort of cooperative activity with the reader" (p. 171). A bridge of shared features makes it possible for writers and readers to communicate. Yet it is the existence of some felt differences that spark writers to wish to communicate. It seems then that a writer must keep two points in mind: (a) the knowledge and perspectives readers are likely to bring to the encounter, and (b) the uniqueness of one's own perspective. If accomplished, this sharing will change readers' images in some way. This change may be:

> 1) a change that results in reconstruction of the image or some part of it, 2) a change that expands the image, that adds to it, or 3) a change that alters the clarity or the certainty with which some part of the image is held. We might add a fourth possible result of the writer's efforts: no change at all. (p. 217)[1]

While classical rhetoric suggests certain ways to go about inducing a desired change in readers' beliefs, present language use expands the way this writer-reader relationship is drawn upon. The relationship becomes a way of discovering ideas and forms, a uniting of content and form, rather than a repertoire of patterns.

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[1] From *Rhetoric: Discovery and Change* by R. E. Young et al., © 1970 by Harcourt Brace Jovanovich, Inc. and reproduced with their permission.

	Contrast	Variation	Distribution
PARTICLE	1) View the unit as an isolated, static entity. What are its contrastive features, i.e., the features that differentiate it from similar things and serve to identify it?	4) View the unit as a specific variant form of the concept, i.e., as one among a group of instances that illustrate the concept. What is the *range* of physical variation of the concept, i.e., how can instances vary without becoming something else?	7) View the unit as part of a larger context. How is it appropriately or typically classified? What is its typical position in a temporal sequence? In space, i.e., in a scene or geographical array. In a system of classes?
WAVE	2) View the unit as a dynamic object or event. What physical features distinguish it from similar objects or events? In particular, what is its nucleus?	5) View the unit as a dynamic process. How is it changing?	8) View the unit as a part of a larger, dynamic context. How does it interact with and merge into its environment? Are its borders clear-cut or indeterminate?
FIELD	3) View the unit as an abstract, multidimensional system. How are the components organized in relation to one another? More specifically, how are they related by class, in class systems, in temporal sequence, and in space?	6) View the unit as a multidimensional physical system. How do particular instances of the system vary?	9) View the unit as an abstract system within a larger system. What is its position in the larger system? What systemic features and components make it a part of the larger system?

Figure 2.8. Young, Becker, and Pike's heuristic procedure. (From *Rhetoric: Discovery and Change* by R. E. Young et al., © 1970 by Harcourt Brace Jovanovich, Inc. and reproduced with their permission.)

Finally, Young, Becker, and Pike enter into a discussion of style. In traditional rhetoric, considerations of style focus on the final product. Young, Becker, and

Pike, however, redefine style in terms of process: "style implies, we believe, an ability to isolate and identify the problems inherent in the activity of writing and to move toward workable solutions deliberately" (p. 360). They believe that choices exist at all levels of language and act to constrain one another. Many are made intuitively rather than through conscious analysis. But even intuitively, writers have some sense of intelligent choices in relation to the universe of a particular piece of discourse. It follows that editing is an extension of this ability to make choices, thus writers do not have to make the correct decisions the first time; they may experiment until they achieve their intended meaning.

Young, Becker, and Pike's theory can be summarized in terms of six maxims they develop:

> Maxim 1: People conceive of the world in terms of repeatable units. (p. 26)
>
> Maxim 2: Units of experience are hierarchically structured systems. (p. 29)
>
> Maxim 3: A unit, at any level of focus, can be adequately understood only if three aspects of the unit are known: 1) its contrastive features, 2) its range of variation and 3) its distribution in larger contexts. (p. 56)
>
> Maxim 4: A unit of experience can be viewed as a particle, or as a wave, or as a field. (p. 122)
>
> Maxim 5: Change between units can occur only over a bridge of shared features. (p. 172)
>
> Maxim 6: Linguistic choices are made in relation to a universe of discourse. (p. 301)

This is a richly suggestive theory of the writing process. Particularly interesting are the notions of conceptual and relational language hierarchies, the importance of writers' considerations of readers during the whole process, and style defined as making choices. While Young, Becker, and Pike drew upon linguistics and anthropology in creating their theory, many of the recent developments in psycholinguistics, sociolinguistics, cognitive psychology, and reading were only underway at the time it was written.

Emig: Dimensions of the composing process. The work of Emig (1971) has pioneered an interest in development of writing theories using an inductive approach. Until the time of Emig's study, theories of writing were deduced usually from rhetoric, philosophy, or linguistics. Emig proposed instead, that a theory should be developed by actually observing the writing process. Using interviews and a composing aloud technique, Emig was able to document the writing process as engaged in by eight twelfth-graders over a series of four tasks. Categorizing writers' behaviors, Emig derived ten dimensions characterizing the writing process engaged in by these students: context of composing, nature of stimulus, prewriting, planning, starting, composing, reformulation, stopping, contemplation of product, and seeming teacher influence on piece (see Figure 2.9).

As well as being able to characterize the writing process of these students, Emig found she could divide their work into two modes she called reflexive and extensive. Reflexive writing is basically contemplative; the writer is interested in figuring out what an experience means. Extensive writing, on the other hand, is

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1. Context of Composing

Community, Family, School

2. Nature of Stimulus

Registers:

Field of Discourse—encounter with natural environment; encounter with induced environment or artifacts; human relationships; self.

Mode of Discourse—expressive-reflexive; expressive-extensive.

Tenor of Discourse

Self-Encountered Stimulus

Other-Initiated Stimulus:

Assignment by Teacher—external features (student's relation to teacher; relation to peers in classroom; relation to general curriculum and to syllabus in English; relation to other work in composition); internal features or specification of assignment (registers, linguistic formulation, length, purpose, audience, deadline, amenities, treatment of written outcome, other).

Reception of Assignment by Student—nature of task, comprehension of task, ability to enact task, motivation to enact task.

3. Prewriting

Self-Sponsored Writing:

Length of Period

Nature of Musings and Elements Contemplated—field of discourse; mode of written discourse; tenor or formulating of discourse.

Interveners and Interventions—self, adults (parent, teacher, other), peers (sibling, classmate, friend); type of intervention (verbal, nonverbal), time of intervention, reason for intervention (inferred), effect of intervention on writing, if any.

Teacher-Initiated (or School-Sponsored) Writing:

(Same categories as above)

4. Planning

Self-Sponsored Writing:

Initial Planning—length of planning; mode of planning (oral; written: jottings, informal list of words/phrases, topic outline, sentence outline); scope; interveners and interventions.

Later Planning—length of planning; mode; scope; time of occurrence; reason; interveners and interventions.

Teacher-Initiated Writing:

(Same categories as above)

5. Starting

Self-Sponsored Writing:

Seeming Ease or Difficulty of Decision

Element Treated First Discursively—seeming reason for initial selection of that element; eventual placement in completed piece.

Context and Conditions under Which Writing Began

Interveners and Interventions

Teacher-Initiated Writing:

(Same categories as above)

6. Composing Aloud: A Characterization

Selecting and Ordering Components:

Figure 2.9. Dimensions of the composing process among twelfth-grade writers. (From *The Composing Processes of Twelfth Graders* by Janet Emig, pp. 34-35. Copyright 1971 by National Council of Teachers of English. Reprinted with permission.)

Anticipation / Abeyance – what components projected; when first noted orally; when used in written piece.

Kinds of Transformational Operations–addition (right-branching, left-branching); deletion; reordering or substitution; embedding.

Style–preferred transformations, if any; "program" of style behind preferred transformations (source: self, teacher, parent, established writer, peer); (effect on handling of other components–lexical, rhetorical, imagaic).

Other Observed Behaviors:

Silence–physical writing; silent reading; "unfilled" pauses.

Vocalized Hesitation Phenomena–filler sounds (selected phonemes; morphemes of semantically-low content; phrases and clauses of semantically-low content); critical comments (lexis; syntax; rhetoric); expressions of feelings and attitudes (statements, expressions of emotion–pleasure/pain) toward self as writer to reader; digressions (ego-enhancing; discourse-related).

Tempo of Composing:

Combinations of Composing and Hesitational Behaviors

Relevance of Certain Theoretical Statements concerning Spontaneous Speech

7. Reformulation

Type of Task:

Correcting; Revising; Rewriting

Transforming Operations:

Addition–kind of element; stated or inferred reason for addition.

Deletion–kind of element; stated or inferred reason for deletion.

Reordering or Substitution–kind of element; stated or inferred reason.

Embedding–kind of element; stated or inferred reason.

8. Stopping

Formulation:

Seeming Ease or Difficulty of Decision

Element Treated Last–seeming reason for treating last; placement of that element in piece.

Context and Conditions under Which Writing Stopped

Interveners and Interventions

Seeming Effect of Parameters and Variables–established by others; set by self.

Reformulation:

(Same categories as above)

9. Contemplation of Product

Length of Contemplation

Unit Contemplated

Effect of Product upon Self

Anticipated Effect upon Reader

10. Seeming Teacher Influence on Piece

Elements of Product Affected:

Registers–field of discourse; mode of written discourse; tenor of discourse.

Formulation of Title or Topic; Length; Purpose; Audience; Deadline; Amenities; Treatment of Written Outcome;

Other.

(Figure 2.9 continued)

active; the writer is interested in deciding how to interact with the environment because of an experience. Emig found that reflexive writing tended to be self-sponsored while extensive writing was more school-sponsored. Interestingly, Emig found that the number of process dimensions and time spent varied, depending on which of the two modes students were engaged in. Reflexive writing was characterized by a far longer prewriting period; there were more discernible moments of starting, stopping, and contemplating the product and more frequent reformulation. Extensive writing was comparatively detached with little contemplation of the product or revisions. In terms of school-sponsored writing which is mostly extensive, the criteria students used to judge their work concerned "the accidents rather than the essences of discourse—that is, spelling, punctuation, penmanship, and length rather than thematic development, rhetorical and syntactic sophistication, and fulfillment of intent" (p. 93).

With Emig's work begins the present movement away from a traditional paradigm of writing to a more process oriented view in research and teaching methodology. However, it is difficult to see relationships between Emig's view of the writing process and reading. This is probably a matter of emphasis. While Emig was interested in documenting dimensions of the actual process students engage in, she did not investigate the cognitive functioning that occurred. At the time of her study, theories of meaning, comprehension, text, and writer/reader interaction were not as articulated as they are today.

Frank J. D'Angelo: A conceptual theory of rhetoric. D'Angelo's theory (1975) treats more fully than any other theory to be discussed in this review, the traditional concerns in rhetoric. This does not mean D'Angelo's ideas are dated; unlike others, one of the values of his theory is that he attempts to integrate traditional rhetoric with insights from cognitive psychology, linguistics, and psycholinguistics. D'Angelo uses the term "rhetoric" throughout his book, but clearly is interested in developing a theory of writing.

D'Angelo's primary interest in developing a theory of writing is structure. He takes the view that structure and content can be separated: "The concept of structure is our model of understanding, and it is not inaccurate to separate the idea of structure from the concept of content" (p. 9). D'Angelo argues that perception and understanding are based on persons' abilities to perceive structures. What he fails to see, however, is that structure is not a unique quality. The structure persons perceive is related to the use of language in the context of situation. This alternate view suggests that structure and content cannot be separated.

Like the discourse analysts, D'Angelo believes that the structure of writing represents the structure of thinking. In his theory he wants to address two basic questions:

1. What are the innate organizing principles, the deeper underlying mental operations, the abstract mental structures that determine discourse?
2. What hypotheses concerning this internalized system will account for the nature of its basic principles?

D'Angelo believes structure exists at three levels in written discourse: (a) the topics of invention, (b) the patterns of arrangement, and (c) the stylistic aspects of sentences. These correspond to three functional aspects of language: (a) the heuristic, (b) the organizational, and (c) the stylistic. D'Angelo views the conceptual structures underlying these three as closely interrelated, and proceeds to demonstrate this in his theory.

According to D'Angelo, topics represent abstract underlying mental processes, and therefore have psychological reality. He divides topics into categories and subcategories, as Figure 2.10 shows. Patterns of arrangement, D'Angelo believes, are of two types: the grammatical and the semantic. The pattern of a particular piece of discourse can be discovered using syntagmatic and paradigmatic analyses. Syntagmatic analysis is similar to Christiansen's method of paragraph analysis, involving the indenting of sentences of a writing sample based on the progression of text, to discover its features of subordination and coordination. Paradigmatic analysis, on the other hand, attempts to discover the patterns of organization, and principles of forward motion. These are semantic and conceptual, and represent underlying thought processes. Finding an underlying narrative pattern would be an example, but D'Angelo's system allows him to look for other patterns of nonnarrative text as well.

D'Angelo believes further, that persons learn or can be taught these patterns of organization. The patterns can then be used to organize one's thinking in the discovery of content. This point of view D'Angelo sees in contrast with the "new romanticists" whose emphasis is on writing relatively free of control and direction. D'Angelo argues that the mind is not a tabula rasa, and that a sense of structure is necessary in order to perceive one's environment. A sense of structure is internalized according to his notion of schema.

The value of D'Angelo's theory is that one can begin to deduce from it how schema relate to and operate on different parts and levels of the writing process. The drawing in Figure 2.11 is representational.

It seems, however, that three problems can be pointed out about D'Angelo's theory. First of all, it attempts to analyze written products for insights into thinking processes. Second, it does not speculate on the operation of the writing process. Additionally, D'Angelo's theory seems to share a problem characteristic of traditional, as well as of some modern, rhetorical theories. The theories postulate the elements they believe to be part of the communication process. Most commonly included are the speaker/writer, listener/reader, and the content. In a particular piece of discourse, the relationships between these elements can be characterized as stronger or weaker, and thus the discourse is said to have a particular function, expressive or transactional for example. These elements and functions, which exist at some deeper level, result in a text that can be characterized by its mode. What these theories fail to discuss is how or why relationships among the basic elements are determined. Recent language research would suggest the answers lie in the use of language.

Because D'Angelo fails to consider the relationship between the use of language and its structure, he has taken a dangerous position on form. He suggests a focus

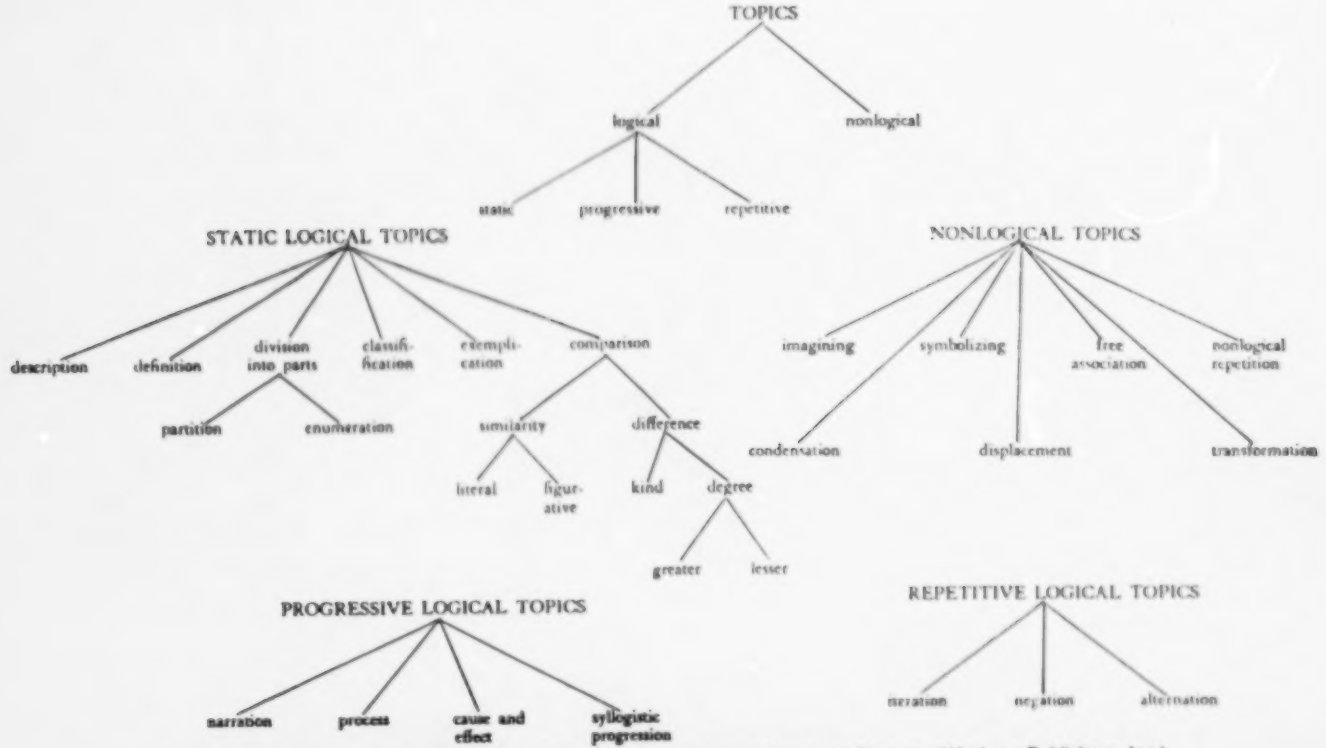

Figure 2.10. Topics in discourse. (Frank J. D'Angelo, *A Conceptual Theory of Rhetoric* (Winthrop Publishers, Inc.). Copyright © 1975 by Little, Brown and Company (Inc.). Reprinted by permission.)

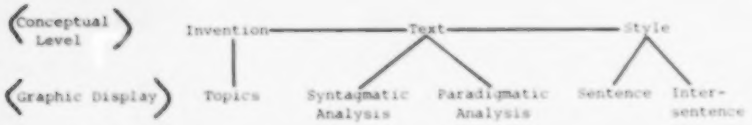

Figure 2.11. Relation of schema to the writing process.

on form leads to content and meaning. Others would argue the focus of proficient writers is always on meaning, and that this involves a combining of content and form. One only focuses on one or the other when the process is not running smoothly.

A. D. Van Nostrand: The Contract Theory of Writing. A. D. Van Nostrand et al. (1978) have developed a model of the writing process that takes strongly into account needs of the reader. They state: "Remember the Contract Theory of Writing: it is easier to organize your information for somebody else than it is to organize it for yourself" (p. 340), and offer a series of drawings to illustrate his model (see Figure 2.12).

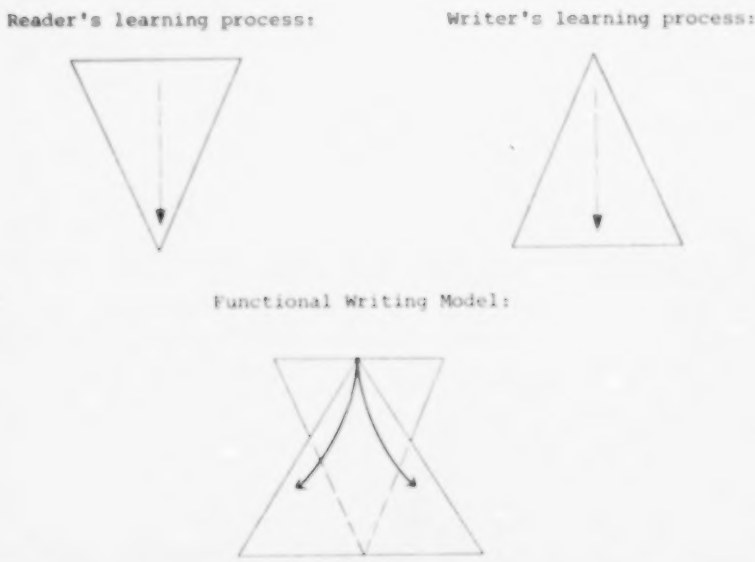

Figure 2.12. Understanding the functional writing model. (Van Nostrand, A. D.; Knobtauch, C. H.; McGuire, P. J.; and Pettigrew, J. *Functional Writing*. Geneva, Ill.: Houghton Mifflin Company, 1979. Reprinted by permission of the publishers.)

The problem with this model is that writers cannot always keep their readers in mind, especially as they are just beginning to explore their own thoughts. Cognitive psychology would suggest there are limits to the processing capacity of the mind at any one time.

Van Nostrand believes the learning process of writers is one of discovering new ideas and evolving an expanding sequence while for readers the opposite is true; conclusions must be deduced or inferred from elaborations. It would seem these processes are direct opposites although, Van Nostrand believes, students can learn to superimpose readers' needs on their own writing process. Doing so may actually be advantageous. Writers can use potential readers' questions to explore and organize their writing. Van Nostrand states:

> By anticipating assertions for the reader as you go along, you learn new relationships within your subject that expand your earlier understanding and may go significantly beyond it. You evolve your new understanding by the very process of accommodating your reader's implied question. You reveal to the reader every new discovery you make through each phase of your evolving statement until you finally recognize your conclusion. Your process of continual summary and forecast actually causes you to see the expanding significance of your own line of reasoning. (p. 343)[1]

Linda Flower (1979) has written an extended discussion of this problem which she labels writer-based and reader-based prose. One might argue that if writers always keep readers in mind, they will never have the freedom to totally expand their own ideas. At the same time, however, it is necessary to pursue working out one's own ideas but then consider how they should be presented to a particular reading audience.

Process Models Influenced by Reading Theory

Britton: The process of writing. Britton is probably best known for his study *The Development of Writing Abilities* (11-18) (1975), primarily an analysis of written products to gain insight into the writing process. Of particular interest were the audience categories, and language functions that could be inferred from these samples. Somewhat less well-known, is the theory of the writing process that Britton also developed in this study. It is this process model that undergirded the entire, now more famous study.

Like Emig, Britton's model is inductively, though not as formally, derived from his work with children, and insights from professional writers into their own creative process. Unlike Emig, Britton also draws on recent reading theory, namely, the work of Smith, in developing his model. For Britton, the basic assumption underlying his model is:

> It is fundamental to our conception of reading and writing that it includes the notion of a functioning human being putting himself 'in gear' with another in order to co-function over a limited period of time. (p. 21)

Britton then divides his discussion of the writing process into three sections: conception, incubation, and production.

During conception, according to Britton writers attempt to deal with new experiences by fitting them into their own hierarchy of knowledge. "However controlled the situation, the writer is selecting from what he knows and thinks. . ., and embodying that knowledge and thought in words which he produces" (p. 23).

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[1] Van Nostrand, A. D.; Knobtauch, C. H.; McGuire, P. J.; and Pettigrew, J. *Functional Writing*. Geneva, Ill.: Houghton Mifflin Company, 1979. Reprinted by permission of the publishers.

During incubation, writers, having begun to make sense of experiences for themselves, must consider demands of the writing task at hand. Writers find themselves at this time considering two factors: (a) getting the facts of the case right, and (b) getting right with themselves what it is they want to say. Britton believes these factors reflect the two fundamental aspects of language: the communicative, and the expressive.

The communicative aspect refers to the message transmission between writers and readers; the expressive to writers' formulations of messages they want to convey. Considering these two aspects is always a part of incubation. Depending then on how the language is to function, one aspect becomes a stronger consideration than the other.

Britton emphasizes that conception and incubation are important prewriting stages, though he does not believe writers have their ideas totally worked out before they begin to write. "Most of the verbalization of ideas probably occurs at the point of utterance" (p. 26).

In schooling, the plan that is worked out during conception and incubation is frequently suggested or imposed. Britton believes instead that planning best succeeds when it is allowed to emerge from writers' own sense of their work. Britton emphasizes that talking can be very helpful in the development of plans during the incubation stage. Talk allows writers to try out tentative conclusions and opinions.

The production stage begins when writers start to put pen to paper. Britton is least exact about this part of the process. What he offers is observations about those areas of the production process that seem most important. For many writers, Britton observes, the beginning is crucial, involving the selection of a tone as well as subject matter. He hypothesizes that writers realize, if only subconsciously, how much the whole tenor is influenced by the way they begin.

Britton places particular significance on writers' pauses during production. While pausing, writers seem to engage in two activities—rescanning and planning. Britton suggests that rescanning "is needed to help the writer keep overall control of what he is doing, as well as to make corrections and improvements" (p. 35). The greatest amount of time during pauses though, is spent planning. Based on his observations of writers, Britton speculates that advice to "think out a sentence before you write it down" may be an impossible recommendation to follow. Britton supports this quotation by Harding (Britton, 1975):

> The notion that in putting an experience into words we always start from a definite something and seek words adequate to convey it may be an oversimplification. It seems necessary to add that language available to us influences our experience at intimate levels and if we manage to convey experience precisely, that may be due partly to the fact that available modes of expression were influencing the experience from the start. (p. 39)[1]

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[1] From *The Development of Writing Abilities* by J. Britton, T. Burgess, N. Martin, A. McLeod, and H. Rosen. Copyright 1975 by NCTE. Reprinted by permission.

Britton also addresses the problem of writers' conscious awareness of the process during production. He observes that conscious and deliberate choosing seem to play a very limited part when production is fluent. Consciousness of the process occurs only when there is a difficulty to be resolved. Thus awareness of the process is normally subconscious.

At this point, Britton begins to draw upon some of Smith's observations about both the reading and writing processes. Smith suggests that learning to write is more difficult for children than learning to read. In reading, one must establish a visual features list, a relatively effortless task, according to Smith. Learning to write is more difficult because a child must learn to reproduce some mediated form of word representation as an intermediary step. Britton would seem to agree.

Britton also draws upon Smith's discussion of the short-term and long-term memory, as it applies to reading. He observes that in writing, only a small amount of information can be held in the short-term memory at any one time. For beginning writers this may be only a very few words since many words must be produced in terms of separate letters. For the fluent writer, whole phrases, meanings, and even general intentions can be held in the short-term memory. But Britton asserts that even the amount stored in the short-term memory by fluent writers can be small depending on how difficult the ideas being grappled with are.

Finally, Britton addresses revision, which was not, interestingly, one of his three stages of the writing process. Britton does not elaborate much on this topic except to say that revision involves nearly as many activities as the process of writing itself. He views revision as more than writers' checking and correcting their drafts. Instead, revision is the point at which writers decide if the words they have chosen to embody their thoughts will sufficiently convey the intended meaning to readers. According to Britton, revision entails "a tacit agreement with the reader that the writer accepts responsibility for his own creation" (p. 47).

E. D. Hirsch: The philosophy of composition. Like Britton, Hirsch (1977) also borrows concepts from the field of reading in developing his model. He has been criticized by other writing researchers for his failure in constructing this model to address invention as a part of the writing process. Even if this criticism is set aside, other problems emerge.

First, the theory Hirsch proposes is really not a theory of the writing process at all. Essentially, it is another product theory, grounded in a concept Hirsch calls relative readability. Relative readability is defined as: "Assuming that two texts convey the same meaning, the more readable text will take less time and effort to understand" (p. 85).

Hirsch's theory can be criticized even as a product model because of recent language and reading research developments. His sense that the writer must constrain the predictions readers can make is probably essentially correct.

However, he continues:

> Nonetheless, a neglect of these large scale covert constraints is rarely the chief cause of unreadable writing. . . . Practical experience tells us that the main uncertainties of bad writing are small-scale, local uncertainties, persisting from word to word and sentence to sentence. These are the uncertainties that slow down and confuse the reader. (p. 105)

That Hirsch views these local uncertainties as most serious is understandable, considering his implicit definition of reading. Hirsch's concern for relative readability stems from a linear, bottom-to-top, pattern-matching view of the reading process. Relative readability must be maintained if the bottleneck of the short-term memory is to be overcome. According to Hirsch, good writing has relative predictability, but note how predictability is defined:

> The connection between the predictability of contextualized prose and its easiness to read seems to lie in the relationship between word predictability and speed of processing. If the word you encounter is a word you expected to encounter, then you will process that word faster. (p. 98)

The predictability with which Hirsch is interested occurs at the word level. Hirsch's work does not take into account schema theory, nor consideration of wider contextual variables, which lead to a more constructive, interactive view of the reading process. Such a view suggests the very elements that Hirsch dismisses as least important for writers to include are probably the most important for readers.

Nystrand: Typology of textual space distortions. A second theorist using the concept of readability to generate a theory of written communicative competence is Nystrand (1979), who views text as functioning within a semantic space that has a set of figure and ground relationships with respect to the page. Writers, in creating their texts, attempt to constrain meaning choices that readers will make so that the intended meaning becomes clear. Nystrand states: "We based our inquiries on the premise that, in communicating well, writers must adequately constrain their readers, i.e., control the predictions they are likely to make while reading" (p. 233).

Writers, like readers, make errors. Nystrand compares these errors, which he terms distortions, to Goodman's use of miscues. For Goodman, miscues act as windows to the cognitive processing that occurs during reading. It is not clear whether Nystrand accepts this view or simply sees distortions that occur in writing as errors. Additionally, Goodman views miscues as a part of the reading process; they happen regardless of the age and proficiency of the reader, if one's focus is to remain on meaning. Nystrand seems to hypothesize that distortions lessen with development.

Nystrand divides textual distortions into three types: misconstraints, impactions, and rarefactions. Misconstraints result when writers provide readers with misleading cues; impactions, when writers provide too many cues; and rarefactions, too few cues. These types of textual distortions can occur on five levels of analysis: graphic, syntactic, lexical, textual, and contextual.

The underlying question becomes, how one decides if a textual distortion has occurred. Particularly at the higher levels of analysis, one can question how a person decides when a textual distortion has happened without relying on evaluator or personal judgments. Nystrand suggests the use of cloze, or clozentrophy. Employing the cloze technique, Nystrand removes every fifth word from a writer's text, then gives the resulting passage to readers/evaluators who attempt to complete the cloze. He then looks at the percentage of a writer's words these readers/evaluators are able to predict. At least three problems exist here. It is hard to see how the analysis system of textual distortions actually matches with the use of the cloze. Where blanks occur in the clozed text is decided arbitrarily, and blanks do not necessarily correspond with writers' textual distortions. Second, cloze as a measure of reading comprehension has been called into question recently (Gould, 1979). Likewise, cloze applied to writing may measure some part of a writer's competence with the process, but certainly not all of it.

Nystrand states that "both longitudinal and cross-sectional studies would presumably show an increasing differentiation of readers with whom the writer can communicate" (p. 241). Used would be clozentrophy, where, rather than comparing readers' responses to the writer's words, the writer's words would be compared to responses of a criterion group, i.e., designated readers. Responses of the criterion group would be held as a given standard. It is unclear whether Nystrand takes into account the fact that readers, too, alter their predictions based on any information they can surmise about writers. Communication is a two-way interaction. Writers must help readers, but readers must also cooperate with writers.

King and Rentel: Towards a theory of early writing development. Finally, one must consider the recent work of King and Rentel (1979) toward a theory of early writing development. Although King and Rentel do not rely directly on reading theory, they borrow heavily from all areas of language research. Therefore their work suggests close relationships with elements involved in current theories of the reading process. King and Rentel discuss recent work on story grammars, pointing out that the significance of these structures for early writing development ought to be investigated. Additionally, they see cohesion and the role of context as important to a theory of early writing. And finally, they believe planning in writing ought to be studied in relation to a three-level design of decision making developed by Chafe, of schematizing, propositionalizing, and categorizing. King and Rentel do not really develop their ideas fully into a new theory of the writing process, but point the way.

This review of studies reaches a similar position, concluding that to date no adequate theory of the writing process has been proposed that takes fully into account recent developments in language and reading research. In the next chapter such a theory will be presented. If a theory of writing can be developed and supported by research that more clearly parallels current theories of reading, then it ought to be possible to look once again for relationships between the two processes, this time with more depth than has previously been possible.

Chapter III

A Transactional Theory of the Writing Process

Frequently, "composing" is the name given to the process in which writers engage. Selection of the term "composing" suggests the importance of the mental processing writers perform. Composing also suggests links among writing, theories of problem solving, and creative aspects of the arts. The term "writing," on the other hand, is frequently linked to children's first attempts to print letters, spell words, and master handwriting. These acts, it is felt, do not reflect the constructive mental aspects of composing. This belief is reflected in two pedagogical assumptions: namely, that children must master handwriting and spelling before they can begin to compose, and that these skills must be taught. The theory to be posited below is intentionally labeled a theory of writing, to suggest the need to reconceptualize, even at the earliest levels, children's first attempts at writing. Writing may be defined as a transactional process of progressive refinement that occurs over time, and results in a graphic display for which a possible text-world model can be constructed.

As both Chapters I and II have documented, serious questions can be raised about current models of the writing process. Summarizing across models, the most serious problems are these:

1. The relationships among content, function, and form have yet to be adequately explained. Product theories have consistently stressed how knowledge of various discourse forms can help to generate content. Tagmemics and other prewriting heuristics have opposed this view. While these new perspectives suggest how content and form relate in planning a composition and contemplating one's product, they do not explain how form and function operate during actual production.

2. The notion of linearity has yet to be fully abandoned. Beginning with Emig's work, research has become more process oriented. The result to date has been a tendency to describe writing in terms of a series of stages. Attempts to get around a strictly linear view have been proposed by introducing the concept of recursiveness, or that various subprocesses of the writing process may occur several times over. Use of this concept fails, however, to suggest the extent to which decisions on one level may affect others.

3. The relationship of choices to the writing process has yet to be adequately explained. Traditionally, writing is viewed as a constructive mental process involving a myriad of possible choices. New models suggest reading, too, is a constructive mental process involving choices. However, choices on one level are believed to influence those on others, thus narrowing the number available. The question of whether a choice on one level affects that on another has never really been explored in current writing models.

4. The nature of error in the writing process has yet to be adequately explained. Even the most proficient writers make errors depending on the difficulty of their tasks. Yet no model of the writing process to date considers the relationships of world knowledge, writing task, and memory to adequately explain the source of these errors. Additionally, no model has adequately explained how one might go beyond an examination of errors in children's written products to an examination of their understanding of the writing process.

5. Present applications of reading theory to the process of writing are inadequate. Reading theory is most frequently discussed in the sense that writers must take into account needs of their audience, i.e., readers. Related to this has been the extension of the concept of readability to explain style. Both of these approaches attack surface level problems, yet never really grapple with the nature of shared understandings between readers and writers as to how meaning is generated from print. While some reading researchers are becoming interested in this issue, they fail to see how the two processes may be alike at even deeper levels as cognitive processes. Finally, and perhaps most curiously, the role reading itself plays in the writing process has never been explored. For example, note the fact that reading in the writing process is most commonly referred to as rescanning or rereading.

6. No theory of writing has sufficiently dealt with the issue of automaticity in the writing process. For years educators have believed that children must learn to form letters and to spell before they can write. Writing, then, is the transcribing of one's thoughts into written form. Such is a product-, rather than a process-oriented, view of writing.

7. Present theories of writing have relied on the concept of egocentrism to explain some writers' apparent lack of audience awareness in their written products. Ongoing research on the writing of preschool children would challenge this notion and suggest what must be examined is children's negotiability among several systems of language.

8. No current theory is powerful enough to explain the writing process at all levels of development. Most current theories are designed to explain the writing process as engaged in by proficient college writers. Few, if any, theories of children's writing exist.

Schema theory, particularly in view of how it has been used to describe the reading process, provides a vehicle powerful enough to deal with all eight of these problems. The schema-theoretic view of writing that follows can be

grasped in terms of five major concepts: world knowledge, cybernetic system, the role of reading, development, and transactions. Once these are explained, theses for each are postulated as to how the key concepts function to explain ease versus difficulty within the writing process. These five theses are derived by transforming those posited by de Beaugrande (1978, 1980) to explain ease or difficulty in text recall.

Before beginning to explicate the theory, two other terms must be defined and their difference clarified. In the theory to follow, marks on the page will be referred to as the "graphic print display," which must not be confused with the "text." While in everyday usage these terms are virtually synonymous, that is not true in this theory. Instead "text" is used more technically to refer to the meaning that can be *constructed from* the graphic print display. Here text becomes a mental entity, while the graphic print display is a physical one.

World Knowledge in the Writing Process

The Role of World Knowledge in Guiding Perception

The fundamental assumption underlying a cognitive model of the writing process is that persons are capable of making sense of their environment by using their prior knowledge of the world to guide their perceptions. This prior knowledge is made up of mental units called propositions, which in combination form schemas. Several schemas in turn can be combined to form larger units known as schematas. In this theory it should be noted that "schemata" is not used as the plural form of "schema"; the form "schemas" is used instead. "Schemata" is reserved to refer to the overriding idea, expectation, or prediction that a writer wishes to communicate in a text. A schemata may be thought of as consisting of several schemas that work together to form a network. It follows that when the overriding conceptualizations of several writers are referred to, these are known as "schematas."

All prior world knowledge—stored as language, or in any of the other sensory modes—represents types of schematas. In fact, it seems important to remember that what persons know is not always reflected by their language. Some persons may possess far more alinguistic than linguistic schematas.

Prior knowledge, regardless of its type, is important because it acts to guide perception. A diagram proposed by Neisser (1976) to explain the functioning of cognitive maps, a particular type of schemata, seems relevant (see Figure 3.1). According to Neisser, persons live within an actual environment full of potential information, as the dark portion of the top triangle would suggest. Moving counterclockwise, the left triangle depicts persons with their whole range of stored prior knowledge. All their cognitive maps are represented by the dark portion of the triangle. Within an environment, persons choose only the portion of their prior knowledge that seems relevant, that represented by the light portion of this triangle. It is this prior knowledge or schemata that direct perceptual exploration and result in actual pick-up of information from the environment. Acquired infor-

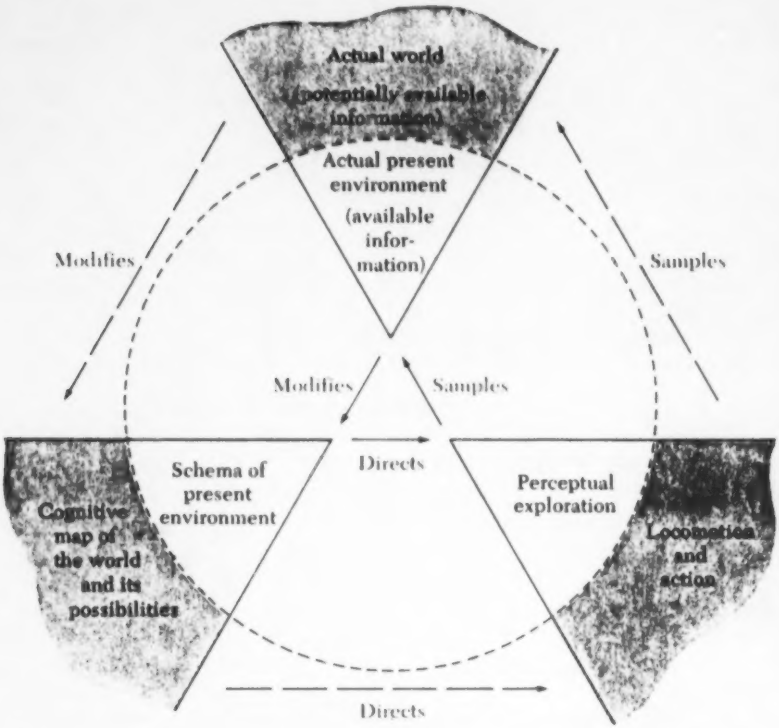

Figure 3.1. Schemata as embedded in cognitive maps. (From COGNITION AND REALITY: PRINCIPLES AND IMPLICATIONS OF COGNITIVE PSYCHOLOGY by Ulric Neisser. W. H. Freeman and Company. Copyright © 1976.)

mation, in turn, may modify stored knowledge, or may modify which additional aspects of prior knowledge are called on to further guide perception. Thus, prior knowledge both guides perception and is modified by it.

Neisser (1976) further suggests that the relationships among prior knowledge, perceptual exploration, and the environment are embedded, not sequenced, and that they are interactive.

> Just as the room and the lamp exist together, one including the other, so my orienting schema and my schema of the lamp are simultaneously active, the former including the latter. Each is a phase of a cyclic interaction with the environment; both interactions occur continuously. They cannot be comfortably separated. . . . Actions are hierarchically embedded in more extensive actions and are motivated by anticipated consequences at various levels of schematic organization. (p. 113)[1]

[1] From COGNITION AND REALITY: PRINCIPLES AND IMPLICATIONS OF COGNITIVE PSYCHOLOGY by Ulric Neisser. W. H. Freeman and Company. Copyright © 1976.

In writing, prior knowledge guides writers' perceptions of their environment. Perceptions gained may have three possible results: (a) they may modify writers' prior knowledge, leading to changes in what writers' first thought they perceived; (b) they may activate and guide additional prior knowledge that is accessed; and/or (c) they may influence the very nature of the writing process engaged in to complete the task at hand. As Neisser suggests, these actions are not easily separated. Perceptions interact with one another continuously, and several may occur simultaneously.

The Nature of Schematas: Functional and Dynamic

While world knowledge has been discussed in terms of its role in perception during the writing process, the actual cognitive mechanisms involved have not. Schema theory assumes that individual mental units, called propositions, work together in memory to form groups known as schemas. These in turn form larger networks called schematas. Schematas are commonly thought of as general structural constructs stored in memory. Nejad (1980) describes schematas as defined from this view as "relatively permanent, frame-like, knowledge structures with constant internal connections" (p. 8). He takes issue with this view of schematas as structures and, instead, suggests a functional view. The main problem with a structural view of schematas, as he sees it, is the need to store so many individual schematas to account for different linkage patterns that may exist. He states,

> Imagine, now, the extent of crisscrossing of associations necessary to represent in structural network form an encyclopedia of everything a particular average college student, for instance, might know. . . . Truly the number of possible connections and combinations (i.e., schemata) is indefinitely large. As long as purely conceptual metaphors such as "link," "association," "pointer," etc. are used, the problem remains masked. At a phenomenal level a structural cognitive network seems impossible to imagine, if not simply impossible. (p. 9)

Instead, Nejad posits a functional view of schematas using a light-constellation analogy. In this analogy he suggests that one imagine a room containing a few hundred lightbulbs, each of a slightly different shade. Every time a subset of the lights goes on, a unique functional pattern is created. When a given cluster of lights goes off, its members are then free to become part of yet another pattern.

Nejad relates this distinction between a structural and a functional view of schematas to differences in definitions of cognition as well. Cognition may be defined as processes, such as perceiving or knowing, or as products, such as knowledge. Structural views of schematas relate to a product orientation, and to emphasis on knowledge. This view results in questions as to how knowledge is processed, stored, and retrieved as a commodity. A functional view of schematas, on the other hand, emphasizes the processes involved:

> In short, based on the functional assumption, the cognitive (conceptual) network is a functional network and as such the network as a whole remains an abstraction—only portions of it can be said to phenomenally exist at different times but never the network as a whole. (Nejad, 1980, p. 16)

So it would seem schematas are intrinsically related to the context of situation in which they occur.

These ideas are important for a theory of writing. They suggest schematas provide structure for writing, but not in the way prior theories have suggested. In previous theories (especially those with the emphasis on teaching), structure is used to generate content, and is a quality of the product. In this theory something else is being proposed; schematas or structures do not exist apart from a particular context, i.e., it takes a functional view. Function and form operate together and cannot be separated. The form can suggest content, but the content also may suggest the form—it makes no sense to speak of these separately. Additionally, the structure of schematas used may, or may not, be a feature of the product. Their importance is in how they lend guidance to the nature of perceiving and knowing. They are dynamic, not static; they take on a particular form only as the product evolves.

What it Means to Communicate

Through sign systems such as language, persons have the capability to explore and extend the depths of their knowledge. Vygotsky (1978), in describing the power of signs, has stated, "They extend the operation of memory beyond the biological dimensions of the human nervous system and permit it to incorporate artificial, or self-generated, stimuli which we call signs" (p. 39). Such signs, of which language is one, help persons mediate their relationships to their environment. In contrast, simple lower order psychological processes may be characterized as stimulus-response relationships. Language as a sign system allows persons more control. The direct impulse to act is inhibited, and an auxiliary sign that facilitates completion of the act by indirect means is employed.

Signs cause another change as well. They not only mediate the relationship of persons to their environment, but also take on significance themselves because they possess the function of reverse action. As a result, signs are capable of causing changes in persons. Language itself becomes a source of world knowledge, making movements to higher psychological states possible.

> Because this auxiliary stimulus possesses the specific function of reverse action, it transfers the psychological operation to higher and qualitatively new forms and permits humans, by the aid of extrinsic stimuli, *to control their behavior from the outside*. The use of signs leads humans to a specific structure of behavior that breaks away from biological development and creates new forms of a culturally-based psychological process. (Vygotsky, 1978, p. 40)

Such a view of language suggests a different view of the primary purpose for writing than is presently popular. The commonly held notion is that the primary purpose of writing is communication from a writer to an audience. While Vygotsky would agree that language is a communicative process, he has defined what this means in a different way: language allows persons to discover, understand, and control their own relationships with, and knowledge of, their environment.

Similar to Vygotsky, Britton (1975) has suggested that the first type of writing learned by children is expressive, where the focus is on creating meaning that is clear to the self. He believes that this expressive use of language by children remains the language of self-discovery for adults. If approached from this view,

writing is a cognitive process that allows persons to make sense of their world through the use of visible symbols. The writing process commences when persons desire to communicate a felt need through a written text. Writing first provides self-fulfillment—a working out for oneself a sense of the world. Its second function then is to communicate that meaning to others. It would thus seem the relationship between persons, writing, and the environment might be diagrammed as shown in Figure 3.2 which represents the suggestion that there is a direct relationship between persons and their environment. How persons perceive this relationship or act upon their environment depends upon the world knowledge they possess. Through the use of signs systems, one of which is writing, persons have the ability to mediate, or begin to control, their relationship with the environment. Writing itself, just like the environment, provides feedback to persons and becomes part of their world knowledge. Additionally, an environment may dictate the writing to be done and, in turn, affect the persons involved. Still more arrows are possible if one contemplates how persons' writing, or environment, may affect the relationship between the other two. For example, the environment, if it is one in which writers feel no freedom to experiment, will negatively affect how writing contributes to the growth of persons' world knowledge.

Writing as Creating Meaning in Context

Most individual words have several meanings. Persons make decisions as to which meaning is correct by knowing which meaning makes most sense in relation to other word meanings in a text. Or as Firth (1934) argued, meaning must not be regarded chiefly as a fixed mental relation or historical process. However, affixing the meaning of a word in relation to those around it may not be enough either. In attempting to translate a tribal language to English, Malinowsky (1923) found direct word-for-word translation was not adequate; to really interpret a tribal language requires knowledge of the situation in which the words are spoken, how individuals respond to each other in that culture, etc. He coined the term "context of situation" to describe this phenomenon. At about the same time, Richards extended this notion to the field of rhetoric. In *The Philosophy of Rhetoric* (1936) he suggested that writing can not be judged arbitrarily as good or bad. Such judgments, he believes, can be made only if one is familiar with a writer's original task and intent.

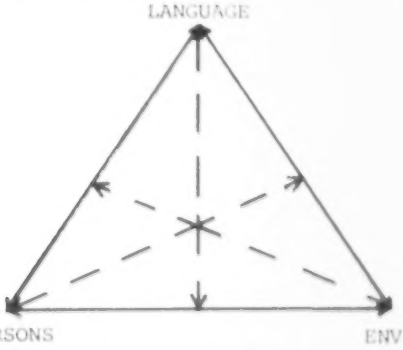

Figure 3.2. Relationships among persons, their environment, and language.

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More recently Halliday (1975, 1978) has studied children's early language development in terms of language use in natural settings. He believes that children "learn how to mean" by learning the functions language serves in everyday life situations. Thus, language has no real meaning separate from the environment, i.e., the context of situation in which it is used; therefore it would seem that language and the nature of schematas are intrinsically related to the context of situation in which they occur.

Field, Tenor, and Mode

While context of situation includes everything within a total environment, persons perceive only that portion of the environment for which they have prior world knowledge. This knowledge guides, but does not necessarily limit, perception. That portion of the context of situation encoded by language users has variously been described by Halliday and Hasan's concepts of field, tenor, and mode, and in Hymes' SPEAKING, Burke's pentad, the speech act theory, etc. It is important to remember that all of these descriptions attempt to explain what and how elements in the context of situation are selected and encoded by language users.

In the theory proposed here, field, tenor, and mode (the system developed by Halliday and Hasan), is used to characterize the context of situation in which a text is produced. "Field" refers to the content of the message; "tenor" to one's relationship to one's readers; and "mode" to both the communication system selected and the form of the message. All three elements are semiotic features, not necessarily encoded in language. Together, they form what is known as the register, which may be thought of as the meaning potential of the text (see Figures 3.3 and 3.4).

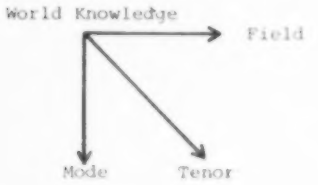

Figure 3.3. World knowledge as guide to selection of field, tenor, and mode.

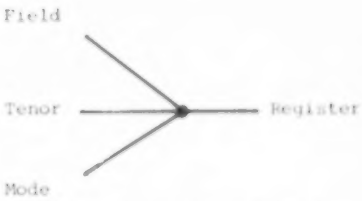

Figure 3.4. Meaning potential of text.

It is important to understand that selections of field, tenor, and mode made from a context of situation, do not occur independently of one another. A decision made in one area will affect decisions in the others (see Figure 3.5). None of these components, nor the resulting register, is actually realized in the graphic print display (see Figure 3.6). It remains meaning potential, which could be expressed in several different ways. For example, a major decision regarding mode is which sign system to employ. It is necessary to postulate these four abstract terms to later explain the degree to which writers can manipulate text. Each of these semiotic features then relates to various features of the text: field, to the ideational component; tenor, to the interpersonal component; and mode, to the textual component.

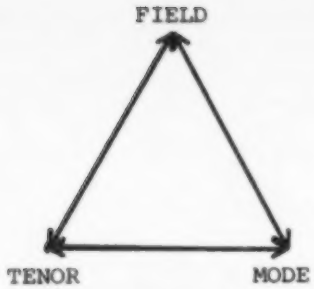

Figure 3.5. Relationships among semiotic features of text.

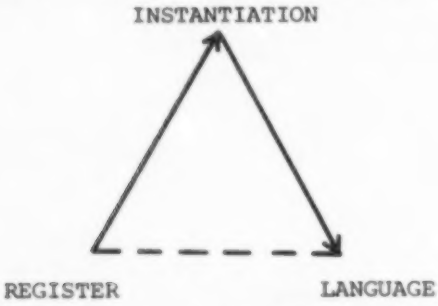

Figure 3.6. Instantiation of register as language.

Language in text is subsequently described as being made up of several systems whose composition is determined by the ideational, interpersonal, and textual features selected (see Figure 3.7).

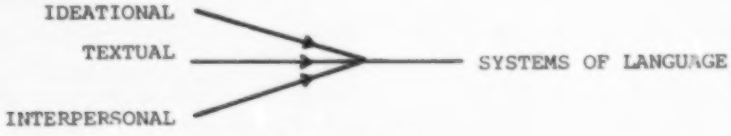

Figure 3.7. Systems of language.

These systems have been described by de Beaugrande (1978). His definitions, at the risk of simplification, are summarized as follows (see Figure 3.8):

1. Sounds—phonemic features, phonemes, and intonation patterns. In writing, these features need to be extended to include graphics as well.
2. Syntax—morphemes, syntactic relations, and phrase structure.
3. Semantics—the meaning of words and concepts shared by members of a language group.
4. Semantics of syntax—procedures for using the order of patterns and arrangements to build hypotheses.

5. Syntax of semantics—repertory of conceptual relations, and procedures for building or recovering schematas, i.e., the elements of story schematas.
6. Pragmatics—the relationship between possible language options, and those actually used, based on a given context.

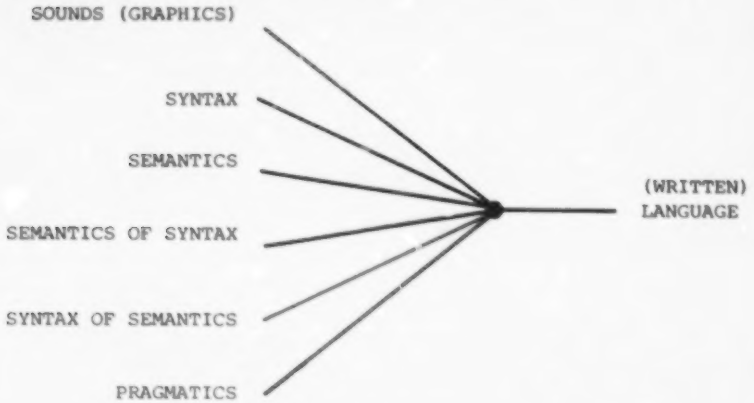

Figure 3.8. De Beaugrande's view of the systems of language.

Thus, the specific context of a situation is described by choices of field, tenor, and mode, which together form register. These in turn act to determine the language systems. The configuration of potential meaning choices becomes more and more limited as these various elements constrain each other. While field, tenor, and mode describe *what* gets selected, the concepts of interpretive procedures and the cooperative principle best describe *how* these decisions are made.

World Knowledge Shared by Writers and Readers

Cicourel (1974) believes that individuals assign meanings to objects and events in their lives through the use of interpretive procedures. These might also be thought of as logic-in-use. At present, researchers do not know what all the interpretive procedures are, but an incomplete list according to Cicourel includes:

1. **Reciprocity of perspectives.** In speech reciprocity of perspectives means that speakers assume there is no difference between how they and their hearers assign meanings to events. In writing, persons generally hold the same beliefs about the meanings readers will assign.

2. **Et cetera assumptions.** In relation to conversation, the et cetera assumption means that speakers and hearers each assume that other details common to an event may be filled in, even though they are not mentioned directly. In relation to writing, where readers are not immediately present, the et cetera assumption might be thought of as a continuum. Writers must decide on levels of explicitness that will inform, though not bore, prospective readers.

3. **Normal forms.** The concept of normal forms generally means that hearers first attempt to interpret ambiguities by normalizing them with the rest of a conversation. In writing, children learn to conform to normal forms if they have a real need to communicate with others.

4. **Retrospective-prospective sense of occurrence.** In relation to speech, if an utterance is unclear, hearers will wait to see if the ambiguity is clarified, or will attempt to resolve later ambiguities by interpreting them in light of previous statements. Writers make extensive use of this phenomenon, expecting readers to understand this language universal, which is necessary because all language unfolds over time.

5. **The reflexive nature of talk.** In conversation, talk itself may provide clues as to how a text is to be interpreted, especially through voice inflection, etc. In writing, such devices as punctuation, capitalization, and special type provide clues as to how a text is to be interpreted.

6. **Descriptive vocabulary as indexical expressions.** The vocabulary that a writer or speaker has chosen, especially specialized vocabulary, gives clues as to how an event is to be interpreted.

Thus, writers make selections of field, tenor, and mode, expecting that both they and their readers mean similar things when certain words are chosen. Writers also assume readers will make inferences appropriate to suggested situations. Writers accept that they must conform to accepted norms if they are to be understood, and also make use of form to suggest how texts are to be interpreted. Finally, writers generally use accepted formats for unfolding their texts, then expect readers to withhold judgments of clarity until certain portions of graphic print displays have been read. In essence, interpretive procedures represent a type of world knowledge writers employ to make selections of field, tenor, and mode.

Additionally, Grice (1975) has developed what he calls the cooperative principle. There are four maxims to the cooperative principle which can be interpreted in relation to writing:

1. *Quantity:* Write enough but not too much.
2. *Quality:* Write what you believe is true and provide evidence.
3. *Relation:* Write what is relevant.
4. *Ambiguity:* Write to avoid obscurity or ambiguity; logically order what you have to say.

Grice views these maxims as growing out of a group of underlying assumptions that in relation to writing might be stated: (a) writers and readers have common aims, (b) the contributions of writers and readers should dovetail, (c) transactions should continue in appropriate styles. Normally, writers work from these maxims and assumptions, knowing their readers expect it from them. However, because they know that readers also understand these assumptions, writers sometimes choose to break them. Grice calls this "conversational implicature." Decisions

writers make to break conventions signal meaning as well. Readers know they must look to other contextual cues to interpret meaning.

Grice believes that both conventional and conversational implicatures can be misunderstood because either writers or readers (a) do not understand the conventional meanings of words, (b) do not understand the overall context, (c) fail to have relevant background to adequately interpret the material, or (d) fail to understand that the maxims above are available. Writers assume these sociolinguistic rules are part of readers' backgrounds, and readers assume the same about writers. When these commonalities in sociolinguistic rules held by both do not agree, a written text fails to communicate.

Halliday also refers to these shared understandings as social codes. Interpretive procedures may be more appropriate because class overtones are not implied and, as discussed by Cicourel, refinement of them may occur. Tierney and Lazansky (1979) have recently referred to these shared understandings between readers and writers as an implicit allowability contract. It is their belief that

> if author-reader-text relationships are framed in terms of a contractual agreement, the liberties which an author may take while producing a text and that a reader may take while interpreting a text become more clearly defined. Indeed, we argue that meaning is sacrificed whenever an author or reader fails to abide by the terms of their contract. (p. 2)

Therefore, interpretive procedures and the cooperative principle combine to suggest how writers make selections of field, tenor, and mode. Putting together all the above remarks, the writing process might be characterized as a sequence in which writers begin with a hazy notion that they want to express some ideas (schematas). They then select elements of field, tenor, and mode using their interpretive procedures, and taking into account the cooperative principle. These become the ideational, interpersonal, and textual features of the text. As writers' ideas become more and more clear, as they make more and more selections concerning the field, tenor, and mode, the range of choices and decisions available becomes more and more limited. Writers frequently talk about a text writing itself.

The theory, however, also recognizes the need, at times, for incubation or a time out from the process. Exactly what happens during this time is not known. The mind may subconsciously work out a solution to the problem. Or, perhaps, time may allow those schematas present to dissipate, so that when one returns to the problem, new solutions seem immediately apparent.

The above manner of describing the writing process is not yet complete. It is far too linear and lacks the capacity to account for the limited processing capacity of the brain. At least four additional concepts must be postulated and clarified: writing as a cybernetic system, the role of reading in the writing process, the nature of development, and transactions during the writing process.

Writing as the Creation of a Cybernetic System

Textuality

When conceived of as a cognitive process, writing results in the formulation of a graphic print display for which writers hope readers will generate an appropriate text. Words within the print display derive meaning only in relation to each other. As a result, the writing process, like the reading process, can be viewed as a cybernetic system. Words exist as elements in an interlocking network which acts to define and constrain their meaning. Mathematically, the dependency relations within a cybernetic system are thought of as probabilities, i.e., what is the probability that *X* has *Y* meaning in this setting? Parts of this interlocking system can function independently of one another. However, when put together, the meaning of the whole is more than the sum of the parts. Textuality may be thought of as the probability that certain meanings/words will be produced.

More specifically, de Beaugrande (1980) has defined textuality by dividing the term into seven specific components. The relationship of each of these to the writing process is discussed below.

1. **Intentionality.** An element important in determining the textuality of a piece of writing is its intentionality. One must decide whether writers mean certain graphic displays to be texts, or to communicate. For example, persons may put marks on a page but never intend them to be regarded as text.

2. **Acceptability.** This term refers to writers' beliefs that their products should be accepted as cohesive and coherent text. The difference between intentionality and acceptability should perhaps be further clarified. Both are psychologically oriented. The first relates to writers' purposes—whether they mean their productions to be regarded as texts. In contrast, the second term refers to the extent to which writers believe readers can generate texts for their graphic print displays. While related, these distinctions are necessary. Writers may intend to communicate yet realize their graphic displays are not acceptable. In reverse, writers may believe their graphic displays are acceptable, but their intent is not clear because readers do not have the prior knowledge necessary to interpret the displays as texts.

3. **Coherence.** Text coherence refers to the continuity among underlying concepts that writers achieve in their texts. To achieve coherence writers use their knowledge of event sequencing, cause-effect, class inclusion, etc. For a text to be cohesive (discussed below), a text must first have coherence.

4. **Cohesion.** Cohesion refers to the continuity achieved among surface elements of the text, and acts to make clear in the linear surface structure coherent aspects of a text. Included are such areas as pronominalization, ellipsis, etc. (Halliday & Hasan, 1976).

5. **Situationality.** Situationality relates to context of situation as previously discussed. It refers tc the amount of mediation writers choose to require of their

readers. Writers must decide what is already familiar to, or can be inferred by, their readers, and therefore need not be included.

6. **Intertextuality.** This concept is closely related to situationality. The difference is that situationality most frequently refers to the actual physical/mental context of situation. Intertextuality, on the other hand, refers to the relationship between a given text and other relevant texts encountered in prior experiences.

7. **Informativity.** This final quality of textuality refers to the relative probability of a text's meaning as opposed to other alternatives. De Beaugrande has hypothesized that there are three levels of informativity. First is that level at which every idea is easily made explicit. In relation to writing, this could be interpreted to mean that the depth of processing needed is shallow, the task clear-cut, a draft written quickly with few errors. This level seems reminiscent of much school-sponsored writing. The second level of informativity requires more care. Most communication of real personal meaning is at this level. In relation to writing, writers must decide upon and require readers to make inferences. These usually fall within a safe range of defaults and preferences that can rather easily be determined. The third level applies to those texts for which no meaning options seem clearly more probable than others, as in the writing of good poetry or literature.

Beyond possessing mutual dependence relationships, a cybernetic system is also dynamic; in this sense writing can be defined as such. As the next section will argue, the writing process involves the instantiation of schematas to levels of greater and greater explicitness. The appropriate degree of explicitness has been reached when the seven characteristics of textuality have been met, and writers are satisfied that they have produced "good" texts. Their ideas as to the exact content and structure of texts are not totally worked out when writers begin working; meaning becomes known only as texts are written—in this sense, writing is a dynamic process.

Prediction

In relation to reading, Smith (1978) has discussed global and focal intentions and predictions. He uses an analogy of driving a car downtown:

> We have a general intention and prediction that we shall reach a certain destination, leading to a number of relatively general predictions about landmarks that will be met along the route. All these predictions are *global*, since they tend to influence the entire journey. . . .
>
> But while global predictions influence every decision until our intended goal is reached, we simultaneously make more detailed predictions related to specific events during the course of the journey. Call predictions of this nature *focal*. (p. 168)[1]

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[1] From *Understanding Reading: A Psycholinguistic Analysis of Reading and Learning to Read*, Second Edition, by Frank Smith. Copyright © 1978 by Holt, Rinehart and Winston. Copyright © 1971 by Holt, Rinehart and Winston, Inc. Reprinted by permission of Holt, Rinehart and Winston, CBS College Publishing.

Like the reading process, the writing process may be thought of in terms of global and focal intentions or predictions. Many researchers and educators, however, would disagree. They believe that the major difference between reading and writing is the "text." In reading, the text is present; one uses it to make predictions and to aid in comprehension. In writing, the text is not present; one must generate it anew from the mind. According to these researchers and educators, then, the writing process is much more difficult than reading.

However, a more sophisticated view of the function of text may exist. Unless readers preview before beginning to read, they have available only cues from the print display prior to their present eye fixations, and the context of situation. Readers make predictions about upcoming text by using these cues.

The same predictive possibilities exist in writing. As in reading, cues exist for writers from both the context of situation and the text already produced. These cues limit the range of upcoming predictions that can be realized in the graphic print display. For example, as readers, you expect this text to continue stating an opinion, defending it, relating it to what has already been said, etc. Thus, this writer's selection of what to write next is limited. In other words, that which is to be written next, just as that which is to be read and comprehended, does not exist in a myriad of infinite choices. As in reading, prior text constrains what one may write in upcoming text.

More technically, persons make both global and focal predictions as they attempt to determine features of field, tenor, and mode within a situational context. If persons decide writing is the best mode of communication, then instantiation of schematas into language occurs. Closely related to prediction at this level is global and focal mapping. Mapping occurs when slots in schematas take on particular values.

A second way to characterize what happens from a cognitive view is to think of the context of situation as representing a knowledge space. "Knowledge space" is a useful term because it suggests that ideas have no crystalline core; instead, they gain meaning only through the interaction/mutual existence of several factors that function to constrain meaning in a particular setting.

Model space might then be used to describe those elements of the knowledge space that are selected to become part of a text. This model space at the beginning of the writing process is only vaguely formed—it is a global prediction. As we speak of reading for the gist, so in natural settings we begin to write having in our minds only a sense of the gist. This gist may be thought of as a gestalt, which is clarified during the process by making global and focal predictions. A written text is actualized as both global and focal mapping occur among the knowledge spaces and the model spaces, through to individual propositions (see Figure 3.9).

Processing at the syntactic and graphophonic levels may be thought of in the same manner. The syntactic production of a phrase occurs not subsequent to, but in parallel with, the production of the lexical elements. Syntactic predictions

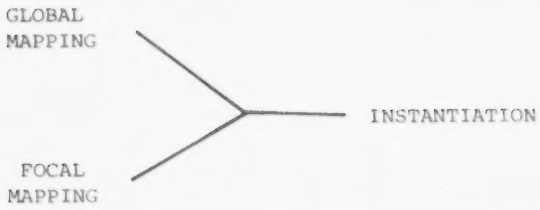

Figure 3.9. Instantiation as the process of global and focal mapping.

interact with, and thus facilitate, production on the graphophonic level. The process of producing written words involves analyses at both the letter and the word levels; these analyses occur simultaneously, and interact with one another. Any set of internal letters repeatedly and simultaneously activated become associated, thus the activation of one of them facilitates the activation of the others.

In producing words, two types of interactive processing go on simultaneously. First, one letter triggers the expectation of another due to the interconnections between schemas, at the letter level. Second, words as schemas look for letters to fill respective slots. Finally, word schemas facilitate other word schemas that are likely to occur in the same sentence.

Feedback: Confirming, Disconfirming, Perceiving Anew

Reading provides its own feedback and reinforcement. Readers make predictions, find their predictions confirmed or disconfirmed, and in that way build in their own feedback and check on comprehension. These same possibilities exist in writing.

From a cognitive view, feedback in the writing process occurs and is necessary if the process is to continue until the text is complete. Good writers, it is hypothesized, focus on meaning and do a great deal of reading, revision, and editing of text. All is part of the process. Prior text acts to predict the probability of certain elements appearing in upcoming text. Writers read what they just wrote to see if the text conveys the meaning they desire, and to help them decide what to write next. The act of writing gives writers a constant record, and feedback as to what it is they do think.

More explicitly, feedback is of three types: confirmations, disconfirmations and new perceptions (see Figure 3.10). Reading one's own text makes these types of feedback possible and suggests the central role reading plays in the writing process (see p. 84). Confirmations occur when writers, through reading, monitor their own productions to confirm that projected readers can construct the text-world models the writers have in mind. Disconfirmations occur when writers find their graphic display insufficient to permit projected readers to construct similar text-world models.

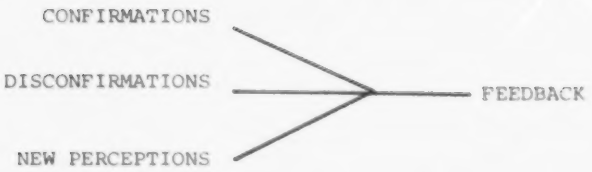

Figure 3.10. Types of feedback within the writing process.

In reading their own texts, writers may also discover new ideas. When they go back to read, writers are not exactly who they were before beginning the writing process. Engaging in the process transforms them. In reading what they have written, writers come to the text anew each time, thus making new perceptions possible. This transformation occurs, however, only if reading is viewed as a constructive mental process.

Reduction of Uncertainty

From the perspective outlined above, writing, like reading, may also be viewed as the reduction of uncertainty. It is this reduction of uncertainty that makes both reading and writing self-fulfilling. In writing, the reduction of uncertainty relates to the instantiation of schemata guided by global and focal predictions. Within a knowledge space, not all possible associations are made explicit in the text. Through the use of interpretive procedures, some are assumed; usually, it is the new or unusual that is accentuated. The writer must establish a criterion/standard between implicit and explicit expression of ideas in the surface structure of the text. The working out of this criterion is a dynamic process that occurs only as the text is produced. It may be thought of as the constant negotiation of a degree of metaphoricity.

Metaphoricity is a term used in theories of metaphor to refer to the degree and way in which two things share similar attributes (Ortony, 1980). In language that is concrete and not metaphoric, two objects share features that are high attributes in both. In language that is more metaphoric, while the two objects still share similar features, they are of high salience in the first, and normally low salience in the second. Such usages become metaphoric because they suggest shared attributes, normally not observed, that are high in the first object and low in the second. Theories of metaphor like the above, if accurate, should fit into a more general theory of language.

If extended, these theories of metaphor suggest that at some level all language has a degree of metaphoricity; language mediates persons' relations to their environments. In this sense, language offers only some degree of similarity to the environment. Persons use language low in metaphoricity if they want to suggest a close match between features of high salience in both meaning and the environment—a closed text. On the other hand, persons use language high in metaphoricity if they want to suggest a wider range of possible interpretations—an open text—where there is room for the possibility of several legitimate interpretations, because the match between shared features of possible meaning and the environment is not explicit.

The Role of Reading in the Writing Process

The theory of writing explicated here suggests that reading is an important part of the writing process. When text production is viewed as a constructive rather than a reconstructive process, writers must read their prior text to (a) confirm or disconfirm hypotheses as to whether intended meaning has been expressed, (b) let prior text help to constrain upcoming text predictions, (c) allow prior text to help develop new perceptions, and (d) overcome memory limitations.

In Feedback

Reading during the writing process acts as a form of feedback (see Figure 3.11). It is key to the reduction of uncertainty as to whether writers' messages have been communicated through the text—both to themselves and to potential readers. Writers begin with global and focal predictions that work together interactively, and are successfully resolved during the writing process. Such predictions are useless, however, unless they are tested. To do so, writers must read their own texts to confirm or disconfirm their predictions, i.e., appropriate text-world models can be constructed (see Figure 3.12).

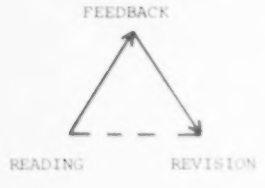

Figure 3.11. Reading as a source of feedback resulting in possible revision.

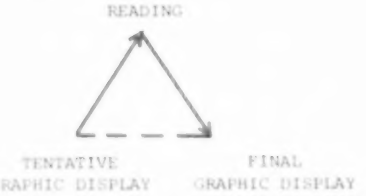

Figure 3.12. Relationship of reading to tentative and final graphic displays.

It is important also to note that reading in the writing process is important to the detection of errors, which may be better termed "missed transactions" (see the section, "Toward Redefining Errors" in this chapter). According to the theory being proposed here, missed transactions can occur regardless of writers' proficiencies depending upon the difficulty of the task. However, through reading, these missed transactions can be found and eliminated. The fact that writers are free to read their own texts greatly facilitates their ability to efficiently focus on meaning at the point of utterance and during revision.

In Constraining Predictions

Viewed as constructive rather than reconstructive, writing becomes a cybernetic process in which reading plays a central part. During the writing process, good writers monitor for meaning the text they have produced. The cybernetic quality of text then acts to constrain the probabilities of upcoming global and focal predictions made by writers. The meaning of a text under creation is not in each word, but through the dependency relations created that act to define all words in relation to one another. One must read one's prior text to tap into this set of probabilities and continue writing.

In Discovering New Perceptions

Currently, during revision and editing, writers are said to reread or rescan their texts. The use of the prefix *re-* in both reread and rescan is curious. It suggests "a doing over" and may seem to imply that writers' purposes in reading and scanning texts are to find errors where they have strayed from their original intent—a product model is implied.

Another interpretation is possible. This theory proposes that each time writers stop to read their own graphic displays they are, in essence, different persons. In fact, each time they read their work, even if they do no further writing, they are different. The prior graphic display evokes writers, as readers of their own print, to consider associated concepts, and past and potential interrelationships. The interactive processing that occurs during reading helps writers, as readers of their own texts, to resolve ambiguities and to generate new interpretations/ideas. Thus, reading within the writing process plays an important role in making writing a means of discovering one's own thoughts.

While writers can make many decisions at once, particularly if the task is easy, short-term memory all too quickly becomes overloaded. Errors, halts, forgetting are the result. Reading as a part of the writing process plays an essential role in getting beyond this bottleneck. Knowing one can go back to correct problems gives writers the freedom to focus on meaning at the point of utterance, and increases the likelihood of experimentation. When a bottleneck is reached, reading allows writers to tap back into the potential meaning network being created and to keep going. Finally, reading allows writers to recall other relationships they have forgotten, or to think of new ones.

In summary, reading as it occurs within the writing process must be explored from a theoretical perspective. Chapter II explained several socio-psycholinguistic theories of reading that might be used, and argued why such theories are the most valid in light of recent developments in language research. These theories of reading are also most congruent with the theory of writing posed here. First of all, schema-theoretic views of reading suggest that readers make predictions, and then confirm or disconfirm these predictions by sampling a minimum number of language cues in a graphic display. In writing, writers also make predictions, which are confirmed or disconfirmed when they read their own text. When concentrating solely on meaning, writers may choose to focus only on the semantic system when reading their texts. If so, they can read again later to confirm their graphophonic and syntactic choices. Second, from a schema-theoretic perspective, reading is perceived as the construction of a consistent semantic network. That which appears in prior parts of the text acts to constrain the meaning choices within upcoming text. Writers then, as readers of their own texts, make use of this phenomenon too, according to the new theory. Third, when readers come to a text a second time, meanings not previously apparent come to mind. The same possibilities exist when writers read their own texts. Thus, when reading in the writing process is examined from such a theoretical perspective, it plays an important role in the process, one that cannot be simply dismissed as rereading, or rescanning.

Development of the Writing Process

The theory posited here makes no distinction between learning to write and writing. It views writing as a naturally developing process for children living in a literate society. While there may be qualitative differences between the writing of young children and that of adults, the theory views the process engaged in as the same at all levels. Irmscher (1977) puts it: "After the first composition, no matter how rudimentary it is, all of the rest throughout school and throughout our lives is practice, growth, maturity, and refinement of the process—over and over again" (p. 33).

Such a theory of the writing process is difficult to achieve if one looks only at written products. However, if one studies the processing that occurs during writing, and its relationship to the context of situation, then similarities at all age levels begin to emerge. Brown and De Loache (1977) have made a similar argument relative to studies of memory development. They state,

> Apart from providing a baseline from which improvement with age can be measured, the inclusion of the younger or less efficient group in these enterprises provides little information. They perform poorly, and therefore highlight the improvement with age we wish to demonstrate. But we know nothing about their state of understanding. They are characterized as not being at a certain level, of not having a certain attribute; they are nonproducers, nonconservers, nonmediators; they are not strategic or not planful; they lack number concepts, reversible operations, or transitivity. They are sometimes described as passive, even though the tasks are designed so that the only way to be characterized as active is to produce the desired strategy. All of these descriptions are based on what young children do not do compared with older children, rather than what they can do; for we have no way of observing this in the confines of the tasks selected for study. (p. 9)

In viewing writing as a naturally developing process that is similar at all levels, this theory proposes that children learn to write by writing for real purposes in natural settings. According to this theory, all the satisfaction children require for continued development is in the process itself. The process provides its own feedback as writers make predictions, generate text, and confirm whether they have reached an appropriate criterion level. Such feedback is internal to writers, in comparison to real readers' feedback, which is external. In natural settings, the feedback from readers focuses on meaning, i.e., how well texts as a whole express writers' ideas.

Because this theory views writing as an organic process, it suggests that Vygotsky's view toward the development of higher mental processes may be accurate, namely, that "development, as often happens, proceeds here not in a circle but in a spiral, passing through the same point at each new revolution while advancing to a higher level" (p. 56). Vygotsky proposed a zone of proximal development between what learners know and what is, at least for the present, beyond their perception. He defined it as "the distance between actual developmental level as determined by independent problem solving under adult guidance or in collaboration with more capable peers" (p. 86).

Development of the writing process may be thought of in a similar manner. Let the following cone-shaped figure represent the writing process (see Figure 3.13; also further diagram explanations in the section, "Explanatory Models" of this chapter). The figure has depth, to represent that the writing process has several parts that work together interactively. The lighter portion represents that knowledge of the process mastered by children; the shaded area their zone of proximal development. This zone of proximal development may be thought of as a zone of experimentation that reflects growth potential. The depth of the cone suggests that growth can occur at many different points within the process, yet may not always be reflected in written products. Vygotsky's theory seems to be supported by research on syntactic development, that writing parameter most thoroughly studied to date (Hunt, 1965; Loban, 1976; Mellon, 1969; O'Donnell, Griffin, & Norris, 1967; O'Hare, 1971; Perron, 1977, 1979; San Jose, 1972).

If one is to talk further about differences between beginners' writing and fluent writing, ideas advanced by Smith on beginning reading and fluent reading suggest useful insights. In beginning to read, children encounter "noise." As children view print they cannot easily determine which, how many, or what respective weight to assign perceptual cues to confirm meaning. It is only through repeating the process in relation to a variety of printed materials that children become more adept at selecting a minimum number of cues to confirm meaning. Thus, through repeated applications, children develop appropriate strategies for gaining meaning from print, i.e., becoming fluent.

The differences between beginning to write and fluent writing can be viewed in the same manner. For beginning writers, there is a tremendous amount of noise. Writers must become facile with cues for representing ideas in text—developing notions of stories and functional spellings, for example. Writers learn how to better represent ideas in text by engaging in the process itself. They become fluent by developing efficient means of cue utilization so that optimal time is left for focusing on meaning. At a given age, however, this does not mean the cues that writers develop are necessarily representational according to conventional standards.

Being developed here is an argument against thinking of writing development in terms of automaticity. It is *not* that one must master certain cues before moving on to others, e.g., one must learn to spell a number of words before one can really begin to write. Instead, it is suggested that development occurs along a number of parameters simultaneously. Thus the process of writing engaged in by children is the same as that for adults; differences are in quality and not kind.

It has been suggested by others that Bernstein's concepts of elaborative and restricted codes may be applied to development of the writing process. This model does not support such a view per se. If code is developmental, one may say that children perceive situations but can assign meaning only in terms of restricted codes. What develops in their writing is the ability to use more elaborative codes to express perceptions. In contrast, the theory postulated here holds that it is perception itself, knowledge of sociolinguistic rules/interpretive procedures, that matures. This in turn demands children's more frequent use of elaborative language, based on their purposes and contexts of situation.

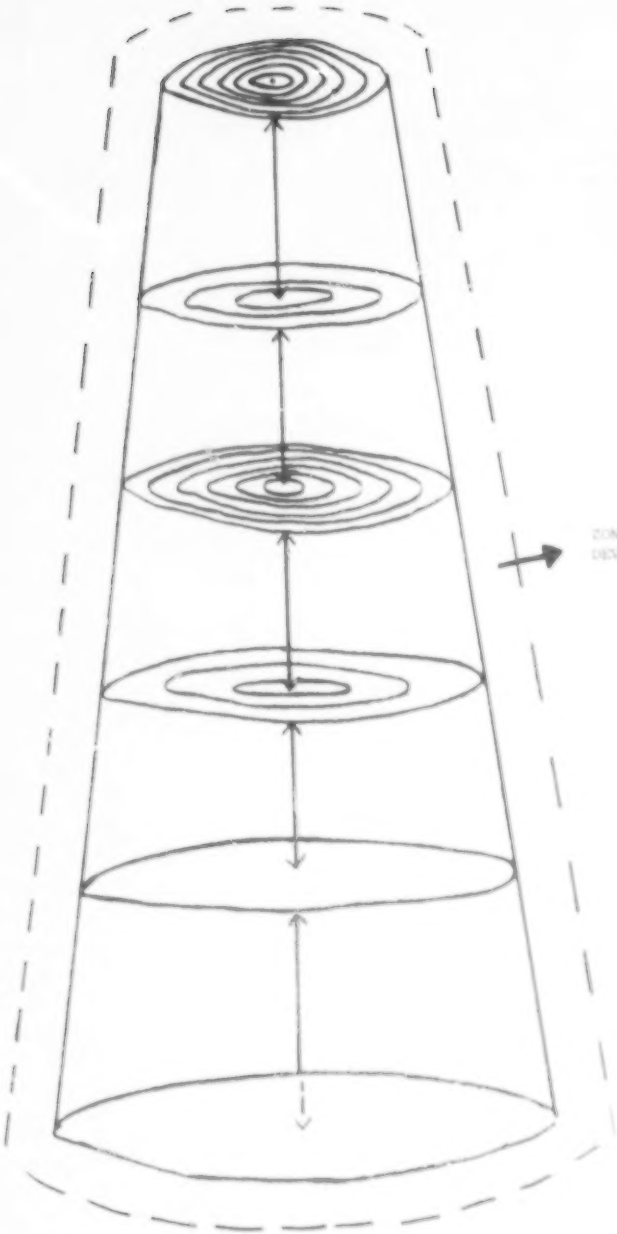

Figure 3.13. Development when writing is viewed as a process of transactions

Toward Redefining Error

This theory posits that error in the writing process must be viewed within a larger perspective of experimentation and development. It holds that writers can, do, and must write directly for meaning. If the primary focus in writing is on meaning, and if one considers limits to the brain's processing capacity at any one time, then the total elimination of error at the "point of utterance" is an unrealistic goal. (This is not to say it is impossible to achieve with a familiar task, however.) Thus, writers' errors should not be viewed as accidents. Instead, they reflect the nature of processing activity and for this reason are called missed transactions within the theory posited here.

It has been proposed earlier that writing be thought of as the creation of a cybernetic system. Within such a system, elements function interactively and simultaneously. But the brain's processing capacity can frequently overload, schematas not be activated, and missed transactions occur. As discussed previously, reading plays an important role in eliminating these difficulties.

Missed transactions must also be addressed in light of the need for hypothesis testing as part of the writing process. Viewed as the written expression of meaning, and not entirely worked out beforehand, writing involves experimentation with function and form until writers are satisfied that meaning is expressed. Writing is then a guessing game, where writers continue to guess and confirm hypotheses until they attain the criterion level they believe will be satisfactory. Feedback from real readers then gives writers further information as to the appropriateness of the criterion level they set.

It is through such experimentation that development occurs. If writing tasks are in some ways new or difficult, writers will not have as effective means of cue utilization readily at hand. A greater number of decisions will have to be made, the brain's processing may become overloaded, and missed transactions are likely to occur. But such missed transactions at the point of utterance must occur and should be expected if development is to be achieved.

Writing as a Process of Transactions

In the end, this theory proposes that writing should be viewed as a process of transactions, in which transaction means the interactive and dynamic activation, instantiation, and refinement of schematas. Defining writing as a transactional process asserts that persons not only enter into the act, but change during it and, in turn, change their perceptions of their products. Thus, writers are not located outside of the process but are an integral, interdependent part of it. In talking about reading, Rosenblatt (1978) has defined a transaction this way: "Transaction designates, then, an ongoing process in which the elements or factors are, one might say, aspects of a total situation, each conditioned by and conditioning the other" (p. 17).

Rosenblatt's interest in transactions stems from her concern for readers' on-line comprehending as they engage in the process of reading a text. Rosenblatt notes that, particularly in reading poetry, persons' interpretations of a line may change

as they continue reading. In describing persons' readings of a quatrain by Frost, she states:

> First of all, each reader was active. He was not a blank tape registering a ready-made message. He was actively involved in building up a poem for himself out of his responses to the text. He had to draw on his past experiences with the verbal symbols. He had to select from the various alternative referents that occurred to him. To do this, he had to find some context within which these referents could be related. He sometimes found it necessary to reinterpret earlier parts of the text in the light of later parts. Actually, he had not fully read the first line until he had read the last, and interrelated them. There was a kind of shuttling back and forth as one or another synthesizing element—a context, a persona, a level of meaning—suggested itself to him. (p. 10)[1]

A similar example has been given by Nejad (1980) to illustrate how schematas operate. In a story he has been using in his research, a young woman stops late at night at a familiar gas station. The attendant insists she come into the station, and bolts the door once she enters. Readers' expectations are that the attendant is going to attack the woman. The story ends with the attendant saying he is sorry to have scared her, but that he was scared himself when he saw a man lying on the back floor of her car. At this point, readers have to reshuffle all their prior schematas in light of this new information.

One notes that the notion of transaction is also very similar to the concepts of open and closed texts posited in Eco's theory of reading (1979). In a closed text, the range of possible interpretations becomes increasingly narrow as one proceeds. Early in the text, readers may have to do some reshuffling of schematas as new information unfolds. However, as they continue, the range of choices narrows, and in the end, only one interpretation of the text is possible. In an open text, the range of choices never narrows; in fact, even at the end, several interpretations may be possible. Readers may be able to talk about more than one overall interpretation, needing, however, to reinterpret the text in light of each particular view.

The writing process may be viewed in a similar manner. This theory would posit that the transactions involved in the writing process are motivation to communicate, perception, instantiation, reading, and revising. Such transactions occur in no particular order. The important point is that what occurs within any one transaction may influence what occurs in others.

Transactions as elements of change have two other important properties as well. First, they are interactive. Transaction implies a mutual dependency network. In such a network a change in one element can affect changes in others. Change can occur in any direction; a change in a proposition may lead to change in a schema, or a change in a schema may lead to a change in a proposition, etc.

Transactions also may work in parallel. They do not have to occur one at a time, but may operate simultaneously. The only limitation becomes the processing

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[1] From *The Reader, the Text, the Poem: The Transactional Theory of the Literary Work* by L. M. Rosenblatt. Copyright 1978 by Southern Illinois University Press. Reprinted by permission.

capacity of the mind. Thus, sometimes writers can make several decisions at once, leading to a perfect product at the point of utterance. Other times processing so many elements at once is not possible, and missed transactions occur.

This view of writing as a process of transactions is different from the view that writing is a process of interactions between writer and reader. For those who subscribe to this view, the inferred "reader" is always another person; little attention is given to the role of writers as readers of their own texts. Additionally, such a view focuses on how writers go about making their meaning clear to potential readers. However, such a view does not consider the fact that in the course of this deliberation, writers' ideas themselves may change. Rosenblatt uses an interesting analogy when she discusses the difference between interaction and transaction. Of interaction, she states that "it implies separate, self-contained, and already defined entities' action on one another—in the manner, if one may use a homely example, of billiard balls colliding" (p. 17). While interaction implies only superficial changes (i.e., following an interaction, both elements internally remain the same), the notion of transaction implies deeper, internal change reflecting the mutual interdependence of elements.

Negotiability

Vygotsky (1978) has suggested that scribbling, the earliest manifestation of writing, has its origins in gestures. Scribbling, better termed prerepresentational print, represents an external activity that, through exchanges with adults or older peers, children come to understand can be used as a collection of signs to communicate facets of the environment. Modeling by proficient writers also allows young children to note differences between their prerepresentational print and the writing of others, and to borrow from these models as needed. The problem for the very young child is that prerepresentational print is a sign system, whereas drawing and writing are not necessarily differentiated. But for proficient writers, differences in how these two systems function is clear, and their use worked out (i.e., negotiated) depending on whether writing or art seems most appropriate to convey meaning.

Young children negotiate among sign systems as well. To young children, however, the need for the entire message to be negotiated through the graphic display alone is not clear. In their view, it is from the entire language setting, including multiple sign systems—both drawing and writing and multiple modes—that meaning is constructed. In a language setting, young children will make a decision to communicate; this communication frequently, however, is not transformed in writing alone. As a result, their written products by themselves may not reflect what children know about the whole of the writing process.

It is through observation and exchange with more proficient writers that young children gain information and feedback as to how meaning is negotiated through print. They begin to learn interpretive procedures, the malleability of print, the value of reading one's text, the features of textuality, and so on. Gradually, these transactions are internalized. It is important to note the extent to which children use the other language arts—speaking, reading, and listening—in an integrated fashion with writing to increase their understanding of the writing process.

Thus, from a process perspective, children's awareness of textuality in writing apart from speech or art is developmental. One must be cautious to point out, however, that this does not mean proficient writers do not employ art as a part of their writing process. Both children and adults use artwork, diagrams, and outlines as placeholders for remembering ideas until they can be realized in the graphic print display. Additionally, writers of all ages realize the transactional qualities inherent to art that help them generate new schematas to be realized in text. The difference between young children and proficient adult writers is the way in which these various sign systems are used to represent meaning; proficient writers better understand and use accepted conventions.

Five Theses

Five theses can now be proposed based on the five basic concepts of the theory. These theses were derived by transforming five of those developed by de Beaugrande (1978, 1980) in relation to the reading process. Each thesis is given below, accompanied by an explanation.

1. Transactions during the writing process are privileged in production if they closely match stored world-knowledge patterns. According to this thesis, persons write best about topics for which they have already developed schematas. The thesis acknowledges the need for ideation, which involves attempts to assign language to experience. It implies the need to write frequently, keeping persons always actively working to build schematas and assign language.

2. Transactions during the writing process are privileged in production if they are attachable to major nodes of applicable schematas. This thesis implies that writing is a cybernetic process and suggests how text generation occurs. Briefly, one uses interpretive procedures to assign meaning to a context of situation. Once field, tenor, and mode have been selected, writers begin to generate the corresponding semantic components of the text: ideational, interpersonal, and textual. From the myriad of potential choices, selections are made and subsequently narrow the range of choices yet available.

3. Transactions during the writing process become conflated or confused because they are closely related in world knowledge. This thesis allows one to hypothesize why missed transactions in terms of readers occur in writing, and points to the need for inferencing in the writing process. Writers must decide on a criterion level, to distinguish between schematas to make explicit in the text and those they can assume are implicit and will be inferred. This decision process requires that writers be sensitive to the sociolinguistic rules demanded by the context of situation and the task. However, problems with meaning occur when writers mistakenly assume that ideas are implicit but when, in fact, they should have made them explicit for particular readers. In this case, writers might have incorrectly inferred that ideas in close association in their world knowledge are also in clear, close association for potential readers.

This thesis also suggests the importance of revision to the writing process. One of the primary purposes of text revision is for writers to detect and modify transac-

tions that remain confused and must be made more explicit. This is not to suggest, however, that missed transactions cannot also be made in the opposite direction: sometimes writers must decide to make more ideas implicit because an original text is too explicit, overly redundant, boring, etc.

4. Transactions during the writing process are altered to produce a better match with world knowledge. This thesis, in addition to Thesis 3, points out the importance of reading and revision as parts of writing. For proficient writers, reading plays an important role in the process. Reading allows writers to confirm or disconfirm that their graphic displays convey the meaning they wish to communicate. Reading also encourages writers to consider new meanings that could be added to texts. If new transactions must be added or other transactions altered, revision occurs.

Additionally, Thesis 4 along with Thesis 3 puts missed transactions in some perspective. Because of limits to processing and writers' world knowledge, missed transactions will occur, and are natural to the process. Those within writers' understanding are corrected through reading and revision. Others may not be, since they are not part of writers' world knowledge. This does not mean, however, that writers should be encouraged to be so cautious that no missed transactions or only ones that writers know how to correct ever occur. If writers are to develop, they must take risks: to learn how to be right, writers must risk being wrong. It is then, through reader feedback, that writers gain further insights that allow them to refine their world knowledge and subsequently correct missed transactions.

5. Transactions during the writing process decay and become unrecoverable if they are neutral or accidental in world knowledge. This thesis points to the negotiability of writing with other forms of communication. Children use pictures to help them generate/remember transactions during the writing process. Adults use jottings, diagrams, notes, etc. in the same way. While through the decay of transactions writers forget schematas they would like to express (sometimes much to their exasperation), it is this phenomenon that also makes language malleable, and revision eminently possible.

Explanatory Models

Figures 3.14 and 3.15 represent the transactional theory of the writing process developed in this chapter. Neither diagram should be regarded as a formal theory model. The diagrams are offered only as a means of synthesizing various portions of the theory, thus adding to its explanatory power. Figure 3.14 depicts kinds of transactions that may occur in the writing process, but excludes the dimension of time. It also illustrates how transactions influence one another, and may occur simultaneously. In contrast, Figure 3.15 focuses on the manner in which the writing process unfolds over time. It shows how the writing process may be thought of as a series of transactions resulting in a graphic display, the creation of which is not a linear series of steps. It also emphasizes that a writer's choices are not limitless, but rather are controlled by global and focal predictions, and global and focal mapping. Each diagram may be described in greater detail.

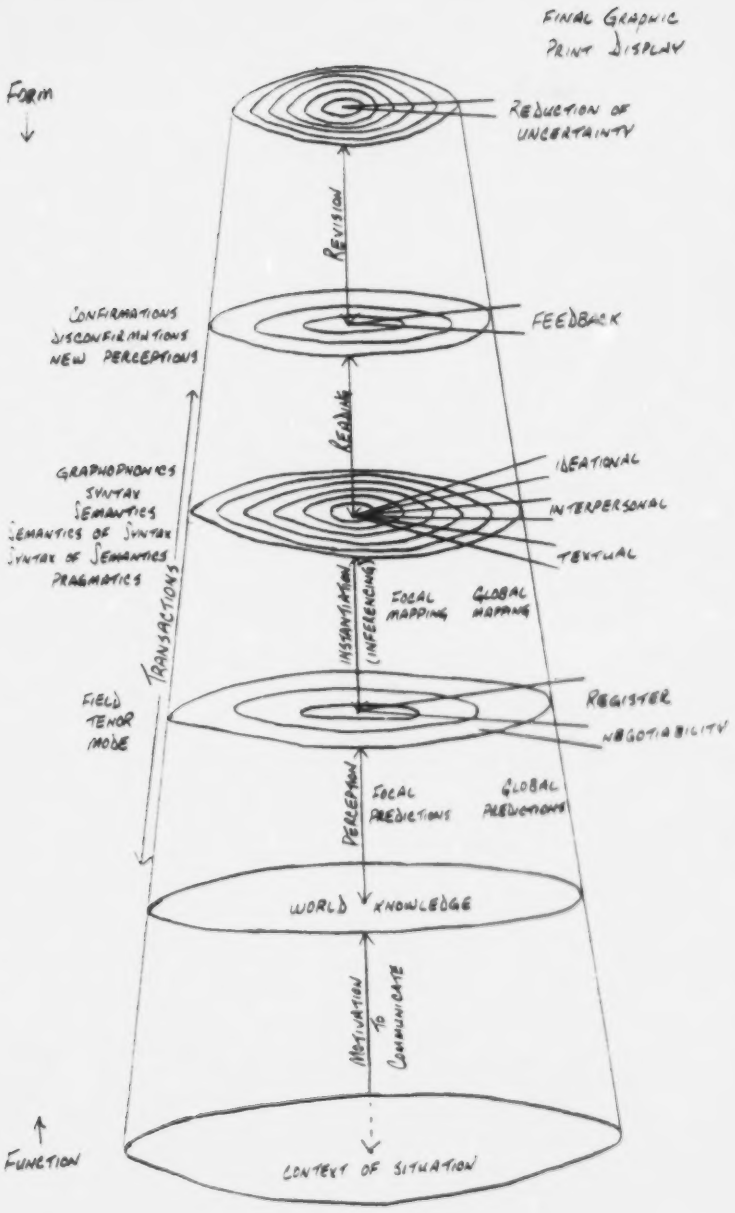

Figure 3.14. A transactional theory of the writing process excluding the dimension of time.

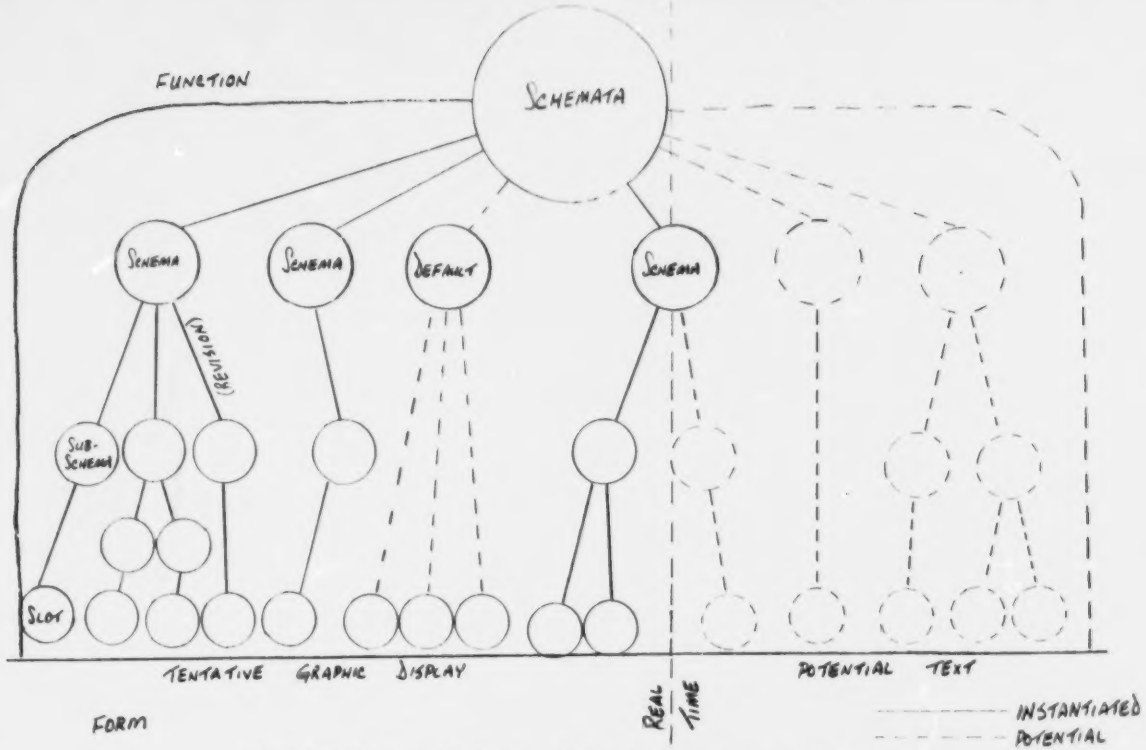

Figure 3.15. A transactional theory of the writing process as it occurs over time.

As shown in Figure 3.14, a language user's motivation to communicate arises within a context of situation. This motivation comes from a functional need that, if expressed in writing, results in a graphic print display. As a writer constructs a text, both function (embodied within the purpose and meaning of the context of situation), and form (that portion of the graphic display already completed and that predicted), act to constrain the process.

A writer's world knowledge is used to make global and focal predictions, which in turn guide various perceptions of the context of situation. More explicitly, predictions guide selection of the semiotic features of field, tenor, and mode within a context of situation. Field is the content selected for communication; tenor, the relationship of a language user to those with whom she/he wishes to communicate; and mode, the selection of both the communication system and form of the message. Related to mode is negotiability, referring to the choice and interplay among communication systems that a language user selects to convey a message. Once choices of field, tenor, and mode have been made, they are referred to as the register or meaning potential of a text. Once register is decided, the actual assigning of language, termed "instantiation," begins. The instantiation of schema nodes is called "global mapping," and that of slots in schemas, "focal mapping." Instantiation involves inferencing as well, because a writer must decide which transactions must be made fully explicit in text, and which will become defaults that readers can be assumed to infer on their own.

Instantiation of the register through global and focal mapping results in a tentative graphic display. This graphic display may be characterized in relation to six categories of language: graphophonics, syntax, semantics, semantics of syntax, syntax of semantics, and pragmatics. Additionally, the semiotic feature of field now realized in language is referred to as the ideational component of the text; tenor, as the interpersonal component; and mode, as the textual component.

A writer then uses reading to confirm or disconfirm that his/her intended meaning can be constructed from the graphic display. Reading of one's own text also allows a writer to use the graphic display to generate new transactions. Revision thus affords a writer the opportunity to change any disconfirmations that become apparent and to add new perceptions. Reading coupled with revision makes certain a writer can maintain a focus on meaning, overcome limits to short-term memory, and reduce uncertainty as to whether readers can construct intended meanings from the graphic print display.

While Figure 3.14 has been discussed from bottom to top, it must again be emphasized that the diagram includes no time dimension. Transactions within the new theory do not occur in the particular time sequence of motivation to communicate, to perception, to instantiation, to reading, to revision. Instead, several of these transactions may occur simultaneously. Additionally, a change in any one may necessitate changes in others. In fact, the best analogy to Figure 3.14 is a cone-shaped beaker. As the introduction of a chemical may immediately change the color and/or properties of a solution in a beaker, so may any change in the writing process signal others, since all parts of the process are interdependent. As a result, rather than calling motivation to communicate, perception, instantiation, reading and revision, "subprocesses," the new theory makes a

point to call them transactions. They may occur in any order and are interactive. Even more importantly, this lack of linearity gives transactions generative power so that during the writing process, it is believed, a writer not only expresses thoughts but also clarifies and discovers new ones. That is, writers may, as they interact with their preconceived ideas in the process of writing, add or change ideas as a result of this engagement with their own thoughts. Hence, the writing process is transactive rather than just interactive.

Figure 3.15 illustrates how, as explained by the new theory, the writing process unfolds over time. It begins when there is a motivation to communicate within a context or situation. This motivation may be thought of as a global prediction not yet clearly worked out in a writer's mind. The overriding, global prediction of the message may be thought of as schemata which encompasses several schemas, each of which takes on a specific value. Schemas are further broken into subschemas and finally into slots which correspond to actual elements in the graphic display. Some schemas, known as defaults, are not actually realized in the graphic display. Instead, a writer assumes that readers will infer information in the defaults, and that making such information explicit will unnecessarily violate the cooperative principle. A writer's global prediction, or schemata, is gradually worked out as the text unfolds. Decisions at higher levels influence those at lower levels; while decisions at lower levels can result in higher level changes. Thus, once engaged in the process, a writer's range of choices is constrained—on the one hand, by the overriding function of the text, and on the other, by the graphic display already produced.

In the diagram, for example, the writer is already deeply engaged in the writing process. A portion of the text has been produced and now exists as a tentative graphic display. The display is tentative because contemplation and further reading by the writer has, and probably will continue to result in revisions. At the point of real time, where the writer is presently engaged, his/her choices as to elements in the potential text are not limitless. The diagram illustrates how these choices are limited by the writer's predictions at various levels and by the graphic display already produced.

This diagram further reinforces the transactive quality of the writing process. Motivation to communicate, perception, instantiation, reading, and revision all occur. However, the particular order in which they happen cannot be predicted. Exactly how a text unfolds over time remains individual to particular writers, and the nature of the messages they want to communicate.

Chapter IV

Engaging in Theory Critique

This chapter is a critique of the theory developed in Chapter III. It adopts methodologies developed by Steiner (1977) and Hawes (1975). First, the theory is judged for clarity, meaning how thoroughly it seems to explain the writing process. Second, the theory is evaluated for external coherence, or the degree of consistency between the new theory and other related theories. Third, the theory is critiqued for internal coherence, which refers to its structural consistency. In judging the theory for internal coherence, all terms are examined for unnecessary overlap or ambiguities, and the relationships among them evaluated. Last, the theory is examined for correspondence, or degree to which it is actually able to explain data. Here, several recent studies of the writing process are reviewed in light of how well their results provide support for, or refutation of, the new theory.

The Necessity of Theory Critique

Researchers engage in theory critique to foster theory development, examining terms for clarity and looking closely at relationships among terms. Through this process flaws are often identified and corrected. Additional conceptual flaws are discovered and/or new insights gained when a new theory is compared to others. Checking a new theory against existing data may further strengthen propositions within the theory, or encourage additional thinking if data fail to support the theory. Also, such examinations of data often help researchers to refine data collection procedures leading to more appropriate testing of a new theory.

Clarity

To judge a theory for clarity, criteria must be selected. Usually these criteria are derived from comments made by experts in the field as to what behaviors must be explained, predicted, and accounted for. Below, the theory posited in Chapter III will be judged using criteria that current writing researchers believe it should meet. These criteria were set out in Chapter I. Each is listed below and discussed in light of the new theory.

1. Will explain the processes involved in writing and means for carrying them out. The new theory posits the processes involved in writing are motivation

to communicate, perception, instantiation, reading, and revision. These are talked about in terms of types of processing. The theory is explicit: these processes are interactive, can occur simultaneously, and do not represent linear stages.

The theory particularly recasts the roles of "planning," "rereading," and "revision" within the writing process. Planning is conceived in terms of global and focal predictions in relation to perception, and global and focal mapping in relation to instantiation. "Rereading" as simply a means of checking one's product is rejected; explored is the role reading plays in generating feedback, overcoming the limited processing capacity of the brain, and discovering one's own thoughts through writing. Revision is viewed not as something writers do once their ideas are thought out, but as an integral part of the writing process that can occur at any point, and that influences the nature of the cybernetic system being created. This recasting of the roles of "planning," "rereading," and "revision" leads to a new view of writing as a process of transactions. A transactional view suggests that all variables related to writing are a part of the process, and a change in any one can possibly cause changes in others.

2. Will explain both the linear and recursive qualities of the writing process. Rather than address this issue, the theory proposes a new way of thinking. The theory posits that writing is not a linear process. While the writing process may be recursive, the theory suggests that describing it as transactive may be better. Such a view is pursued by adopting schema theory as that from which a theory of writing can be derived.

3. Will explain the effect of context on writing. The question of the effects of context on writing is extended by the new theory. It posits that it is not context, per se, that has an effect on writing, but writers' perceptions of contexts. These perceptions are guided by writers' background knowledge. Not only are elements from contexts of situation that writers will choose to include affected, but also the very nature of the strategies employed during writing. Particularly influenced by the context of situation may be writers' willingness to create and test new hypotheses about written language.

4. Will explain the role of semantics in the writing process. The new theory extends the notion of semantics to include semantics of syntax, syntax of semantics, and pragmatics. These concepts were adopted from those posed by de Beaugrande in his view of the reading process. The theory proposes that meaning is not a function of individual words, and can be successfully constructed only when writers and readers share knowledge of the context of situation, and interpretive procedures within a culture. Possessing such knowledge, writers are able to infer what information must be made explicit in the text.

5. Will explain "good" writing. The new theory develops a description of a "good" written product in relation to the degree to which a graphic print display possesses elements of textuality. It also emphasizes that in judging a product to be "good" a writer's sense of purpose must be kept in mind. A piece of writing may not be good when judged by an outside standard, yet may still accomplish a

writer's purpose, and in that sense be "good." Additionally, the notion of a good product must be judged relative to its function within the whole of the writing process.

One might also talk about "good writing" in terms of "good processing." "Good processing" is not necessarily the production of errorless text at the point of utterance. Depending on the variables involved, such is frequently not possible if a writer's focus is to remain on meaning. Proficient writers focus on meaning, and rely on reading and revising to catch missed transactions. Therefore, the creation of errorless text at the point of utterance is not the ultimate goal of good processing. The strategies that writers employ to maintain a focus on meaning are the true indicators of good processing.

6. Will explain why writers are not equally skillful with all kinds of writing tasks. It is generally believed that writing in some modes is more difficult than others. While the theory developed here would agree that writers are not equally skilled in all writing tasks, it would define "task" as involving more than simply the consideration of mode. In describing the nature of a writing task, it is also necessary to consider the context of situation—the relevant background knowledge that writers have which can be used to appropriately perceive field, tenor, and mode, and to express their understanding of interpretive procedures, and the cooperative principle. Instead of looking at differences among writing tasks in terms of mode, the theory suggests that task difficulty is related to (a) how well the transactions needed to complete the task match prior world-knowledge entries, and (b) how attachable needed transactions are to major nodes of applicable schematas.

7. Will predict choices writers make as texts evolve through a series of drafts. To predict choices made in a series of drafts implies order and, in turn, linearity. The theory proposed here cannot predict the order of such choices; indeed, it argues that this is not an appropriate question. In contrast, the theory begins to predict the kinds of choices writers must make, but finds the order dependent on the nature of the whole transaction. This order remains potentially different for every writing task, dependent on the nature and sophistication of the writer's prior knowledge, and the changing relationships among variables once a writing task is begun. The duty of the theory is to describe and account for such choices, but not to predict their exact order.

8. Will predict different demands that different writing tasks seem to place on writers. See the comment on Criterion 7.

9. Will predict how the writing theory evolved might fit within a larger theory of language. See the discussion of external coherence that follows.

Coherence

External

With language research. The theory developed in Chapter III has external coherence with recent language research, particularly by discourse analysts,

schema theorists, and contextualists. Discourse analysts have found it necessary to pose more constructive views of the reading process to account for the inferences and background knowledge readers exhibit in their retellings. Changes in views of the writing process have also been needed as discourse analysts have begun to realize that writers, in expressing meaning, make decisions as to which propositions to make explicit or implicit, expecting readers to make the necessary inferences. Thus, discourse analysts have developed an interest in the shared knowledge between writers and readers about the nature of text and the generation of meaning. In the theory proposed in Chapter III, this issue is accounted for by posing the use of interpretive procedures and the cooperative principle.

The theory posited here is also highly consistent with schema theory. Schemata, however, are carefully defined, not as structural concepts but as functional ones, thus taking into account work of contextualists like Bransford and McCarrell (1975). The theory asserts that context of situation must be considered as a variable influencing the entire process.

Additionally, the theory is consistent with recent socio-psycholinguistic views of reading. As in reading, the theory explains the important role of prior knowledge to the writing process. It poses how the writing process, like reading, can be viewed from a non-linear perspective by using schema theory. Writing is seen as a transactional process in which transactions interact within a cybernetic system, and may occur simultaneously. The theory also develops the importance of reading in the writing process; this role is suggested by, and congruent with, current insights into the reading process.

The theory is also congruent with recent efforts by some other writing theorists. Stallard (1976) has suggested that composing be viewed from the perspective of a cognitive process theory. He implies a theory similar to schema theory when he states:

> In effect, the initial search of cognitive structure promotes a chain of events. The result is a series of searches, each going deeper and becoming more thoroughly exhaustive of the potential within the changing cognitive structure. (p. 183)[1]

Mandel (1978) has developed a view of writing that emphasizes its transactive quality, although this is not the term he uses. He believes writing is not simply the transcription of thoughts already held in the mind. Instead, he states: "The process itself unfolds truths which the mind then learns. *Writing informs the mind; it is not the other way around*" (p. 366). While this last statement may be extreme, it hints at the transactive nature of the process. The mind, according to the new theory, does inform writing but the product thus created consequently informs, and leads to changes in the mind.

De Beaugrande, as well, has begun to develop a theory of writing. He has recently published several articles and devoted a section of a recent book to text

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[1] From "Composing: A Cognitive Process Theory" by C. K. Stallard, *College Composition and Communication*, 1976, *27*, 181-184. Reprinted by permission.

production (1972, 1979b, 1979c, 1980). Combining these sources, the theory of writing de Beaugrande proposes has several similarities to the one proposed here.

According to de Beaugrande, the original impulse to write may be thought of as an intention, similar to the new theory's use of "global prediction." Like the theory proposed here, de Beaugrande views what he terms "the planning and ideation phases" of writing as involving the selection of knowledge not necessarily yet committed to language. The result of these phases is the macrostructure of an ongoing textual world which, if mapped, would result in an outline or summary. The macrostructure is further worked out into the development of a microstructure, which is then mapped into actual language.

These ideas are similar to those proposed in the new theory. Possessing a motivation to communicate within a particular context of situation, writers use world knowledge to develop both global and focal predictions as to the field, tenor, and mode of their texts. These elements interact, are mutually dependent, and not necessarily committed to language. Through global and focal mapping, this combined meaning potential, or register, is instantiated into language.

De Beaugrande believes that ideas and their order are mapped according to mechanisms of control. These mechanisms operate on three levels: (a) information priorities or the rate and distribution of new information being presented against a background of known information, (b) the structure of events, actions, and situations, and (c) grammatical and syntactic options. He states that "the writing and revising process is terminated with a reasonable balance between what is said and what is known, between what is said and what can be supplied by spreading activation or inferencing, and between what is informative and what is dispensable" (1980, p. 213).

These notions are similar to interpretive procedures, the cooperative principle, and the creation of a cybernetic system as suggested by the new theory. It is proposed here, in agreement with de Beaugrande, that the choices available to the writer are controlled by the cybernetic system being generated. Also affecting the choices of writers is their knowledge of information shared by readers and themselves. De Beaugrande sees the steps he has theorized for text production as "all potentially recursive: the writer may reject the initial results and continue to perform a given step. A highly skilled writer such as Shakespeare may be able to encompass all the steps plus recursion in his mind, beginning to write only when the finished product has evolved" (1979b, p. 266).

In contrast to the new theory, de Beaugrande poses some distinctions between text production and text comprehension. He states,

> Procedurally, reversals of operations would cover some differences between production and reception of texts, but by no means all.[2] A text producer has to map a plan onto conceptual/relational content, and the content onto a surface format; the receiver maps the surface back to the content, and the content back to the plan. But it is surely an idealization to claim that the receiver arrives at the same material which the producer started out with. In some cases, the producer would prefer keeping the plan secret or creating the

impression of a quite different plan. The receiver may also adopt an unexpected personal outlook on the presentation. Reversability is furthermore not applicable to the textual operations in which production and reception are running in parallel: the producer monitoring the reception, and the receiver predicting the production. And the production involves much more active selection and decision processes which consume more resources and attention than does reception.

[2] The processing via a transition network would foresee parallel control in prediction of occurrences, but reversed control in stacking and building the network. (1980, p. 200-201)[1]

The theory proposed here does not accept such differences between writing and reading. While de Beaugrande adds qualifiers, he nonetheless suggests that writing progresses from the development of a plan to the mapping out of this plan into a graphic display. While he suggests reading too involves a plan/prediction at the highest level of schematas, he views reading as a filling out of such predictions from the bottom-up, until the reader has filled in the writer's intended message. From the view of the new theory, reading (reception), and writing (production), are best described as being equally interactive processes (transactional). Thus, there is as much filling in top-down as there is bottom-up in both processes; in fact, the use of such terminology is questionable. Writers must always consider readers' perspectives when choosing among alternate ways to express meaning. But likewise, Eco's and Rosenblatt's work suggest that readers, if they are to construct a valid meaning for a text, must keep in mind a model of the writer and his/her intent. Such models allow readers to decide in the end what are viable interpretations across an entire text. From the view of the new theory then, meaning is not lodged in the text, and then reconstructed in readers' heads. Instead, meaning is an interactive process, where readers consider possible interpretations across a text, and settle on those meanings that construct a consistent semantic network.

That writing does seem to consume more resources and attention is true, if one uses a criterion of perfect products. In contrast, persons rarely read to understand and remember every detail in great depth. In this sense, the writing and reading processes might be thought of as generally operating at different points on a continuum. This does not prevent one, however, from saying that the underlying processes are the same. Finally, it should probably be noted that the theory developed in Chapter III considers several areas not pursued by de Beaugrande to date. These include the role of reading, the nature of error, transactions, and development.

With constructivist theories. Another theoretical perspective with which the present theory should be congruent, since it views writing as a constructive process, is that of constructivists. Magoon (1977) has outlined the basic assumptions of this paradigm. Constructivists believe the knowledge persons possess influences their behavior, and that such behavior is purposeful. These same beliefs are inherent in the writing theory developed here. Emphasized by the

[1] From *Text, Discourse, and Process: Toward a Multidisciplinary Science of Texts* by R. de Beaugrande. Copyright 1980 by Ablex Publishing Company. Reprinted by permission.

theory is writers' use of their world knowledge to make selections of field, tenor, and mode. Additionally, writing is viewed as a purposeful behavior commencing when writers are motivated to communicate. This communication mediates writers' relationships to their environment, and may be used to communicate with themselves as the only readers, or to other external readers.

According to Magoon, constructivist theories also assume persons have the ability to organize complexity rapidly, to attend to the meanings of complex communications rather than surface elements, and to project elaborate social roles. The theory proposed here capitalizes on persons' abilities to organize complexity, suggesting that they can make several decisions simultaneously thus rendering the writing process transactive. The theory suggests that proficient writers always focus on meaning and count on the cybernetic quality of text, reading, feedback, and revision to get them through memory bottlenecks, and to eliminate missed transactions. The theory also places importance on writers' ability to project the amount and nature of information they share with readers, and then to apply interpretive procedures and the cooperative principle appropriately.

Last, Magoon emphasizes the focus of constructivist theories on ethnography. The goal of constructivist theories is "an extensive descriptive and interpretive effort at explaining the complexity" (p. 652). Such a perspective means that constructivists emphasize processes as well as end products. Their goal is the explication of the rules that are either being constructed or followed by observed subjects. The position is antireductive, emphasizing the importance of context and holistic analysis. The theory developed in Chapter III emphasizes each of these positions related to ethnography. The theory particularly tries to explicate different kinds of transactions and how these interact to result in formation of a final text. It argues that if the processes and context under which a product is completed are also observed, similarities exist between the writing of adults and very young children that are not otherwise apparent.

Internal

The examination of a theory for internal coherence is not so much a judgment of *what* a theory means, but of *how* it means. An examination of internal coherence focuses on structural mechanisms used in constructing a theory, then analyzes the insights these add to the theory's meaning. Hawes (1975), in a book entitled *Pragmatics of Analoguing: Theory and Model Construction in Communication*, developed six key classifications for categorizing theories: style of thinking; theory type; form of explanation; activity of explanation; structure, substance, and type of analogue; and, finally, model characteristics. Each of these is discussed below in relation to the theory proposed in Chapter III.

While the new theory can be classified according to Hawes' categories, it should be remembered that these criteria stem from the traditional experimental research paradigm. Hawes' method can be used to describe the internal conerence of the present theory, but it is open to question whether improvement of the theory should occur in the manner he would advocate.

According to Hawes, the style of thinking in the theory developed in Chapter III would be characterized as between academic and eristic. This is in contrast to literary style, which describes specific purposes and perspectives of actors, and symbolic style, where the precision and power of mathematics is used to generate predictions. The academic style tends to concentrate on ideational rather than observational data, while the eristic style relies heavily on experimental and statistical data.

The explanatory form of the present theory is concatenated rather than hierarchical. At the present time, it is impossible to divide the new theory into a hierarchy of derivative or deductive statements. Instead, as with all concatenated theories, the component statements work together to form a network of relations that together define a phenomenon.

Given that theories may attempt "scientific," "what," "mental-concept," and "reason-giving" explanations, the present theory might be classified as "scientific." While it does try to redefine components of the writing process, it additionally proposes to explain how the process operates and why certain behaviors occur. The theory will become more scientific as more of the terms acquire operational definitions.

Since the new theory cannot be clearly divided into postulates, theorems, hypotheses, and facts, where hypotheses directly test the validity of postulates, Hawes would probably classify it as a Type II theory. Within Type II theories, tests of hypotheses allow one to prove whether theorems are correct or incorrect. If the result predicted by a hypothesis is not verified, then the theorem is declared false. (But not the basic postulate since in Type II theories, theorems are not directly derived from postulates.) This method of theory building does not reflect how the present theory was derived, however, and leads one to question whether labeling it in this manner is even appropriate.

The new theory employs the use of two analogues, where an analogue is defined as "a relatively well-developed theory, frequently a theory from a seemingly unrelated discipline or about unrelated substance, which is used to assist in the development of a theory presently less developed than the analogue" (Hawes, p. 113). The analogues used here are schema theory and the properties of a cone. The structure of the schema analogue is hierarchical and spatio-temporal, while that of the cone is spatio only. The substance of these two analogues might be characterized as exchange; however, the theory itself argues that the notion of exchange or interaction must be expanded to include transaction.

The three major models or drawings that accompany the theory are visual representations of the analogues employed. These models are meant to be conceptual rather than scalar or mathematical. Their function is to describe and explicate the theory. As descriptive devices, the models in Chapter III attempt to describe a behavior for which no adequate theory exists. Their explicative power is far less.

Normally, relations between concepts are presented by graphing. The resulting graphs have explanatory power that more fully explain important but poorly

developed concepts, and make portions of a theory more amenable to test. In Chapter III, an attempt was made to begin graphing the relationships that exist between some of the terms. However, to graph the whole of the writing process in this manner is not possible, because graphing is basically a linear approach. For example, Mullins, in his book *The Art of Theory: Construction and Use* (1971), makes this comment about graphing: "For this text we will continue to assume a simple linear model without complex relationships since the basic techniques with which we are immediately concerned do not hold for complex situations" (p. 69). While the three drawings that represent the writing process are offered as alternatives to linear diagrams, they should not be regarded as actual models. Such is not possible until advances are made that will allow social scientists to represent complex processes.

Besides a discussion of the internal coherence of the theory via Hawes, one might also apply portions of Steiner's method. She suggests a careful analysis of terms used in the theory, their definitions, and relationships to one another. Such an analysis gives one a good grasp of a theory, and chance to spot internal problems. Appendix 1 is an analysis of all the terms used in Chapter III. The primitive terms are identified, and all derived terms listed and defined. The primitive terms are of particular interest. There are only seven: anticipate, dependency, environment, language, memory, mental unit/concept, motivation, perception. Each of these primitives represents a process rather than a substantive element. Presently, the definition of each process is in question according to a review of research to date. However, this theory assumes certain definitions of these primitives are true, and builds upon these assumptions.

How the New Theory can be Advanced

Problems of the Traditional Paradigm

While the new theory of writing proposed here can be critiqued and placed within the traditional experimental paradigm, it is questionable that it can advance within this paradigm as well. Certain facets of the traditional paradigm are in direct conflict with positions taken in the new theory.

Within the traditional research paradigm, laws from which all other statements are deduced are developed by stripping away context. This is necessary if hypotheses are to become more general propositions and, eventually, laws. In contrast, the new theory presented here advocates that context is an integral part of the writing process, and cannot be stripped away.

Within the traditional paradigm, as one strips away context, more ideal relationships emerge. The most elegant hypotheses relate only two variables, and are unrelated to others. In those cases, ideal measures are independent, freestanding, and orthogonal. The theory of the writing process posed here proposes just the opposite. Variables within the writing process are not independent; they are dependent and form an interlocking network.

Finally, within the traditional paradigm, specific hypotheses are generated prior to the experiment which shape what researchers look for in data. However,

researchers do not necessarily discard or modify hypotheses if they fail to confirm them, but instead work for their elimination by stripping them away, frequently blaming contaminating factors. In contrast, the hypotheses developed in the theory presented here were generated in a different manner, and will be developed further in a different way.

New Directions

To begin to grasp how the theory proposed here might be improved, it may be helpful to think again about its development to date. Certainly, Chapter II provided some insight into the need for a better theory of writing, and began to imply how such a theory might be developed. However, the construction of the new theory in light of methods of theorizing has not been discussed.

On the one hand, as is common in experimental research and theory development, the present theory emerged from applying a new metaphor—schema theory—to writing. On the other hand, such a statement is really simplistic. A decision to use the analogue of schema theory, particularly keeping in mind its previous application to reading, arose from the examination of writing studies from approximately 1960 to the present. One sees from such an effort certain trends: first, the emphasis on syntax, then the realization that other variables influence syntax and must be studied, followed by realization of a need for exploratory studies of the entire writing process. The move is from studies quite rigidly within the traditional experimental design, to exploratory process studies that share many qualities of ethnographic research. It was especially from the reading of these new studies, noting their examination of a wide range of variables and contexts, that the notion of using schema theory as a metaphor emerged.

An understanding of how the present theory was generated is necessary in order to grasp the type of hypotheses it contains, and how these might be improved. The new theory represents a generation of hypotheses using schema theory as a metaphor. This metaphor, however, arose from looking at quasi-ethnographic process studies. The theory then represents a collection of such hypotheses. None were formulated before examining data as is characteristic of classical research design.

Additionally, in traditional experimental design, the search is for general laws which are assumed to hold independent of context. This theory, however, by taking a more ethnographic view, requires seeking out general laws of a different nature. Mischler (1979) in a discussion of this issue has stated, "the task is to specify the conditions under which a relationship of the form $Y = F(x)$ holds" (p. 8). The function of such laws is then different from the traditional research paradigm. The purpose of laws in experimental inquiry is prediction and explanation.

In ethnographic theory building as well, explanation is a major purpose but prediction plays a much weaker role. Magoon (1977) states of constructivist theories, "The scientific goal . . . is often not the traditional one of accurate prediction but instead the careful description and validation of a patterned set of

interrelationships" (p. 668). He argues that the end product of scientific theory ought to be explanation, since prediction, though nice, is not necessary.

Since the nature of hypotheses within ethnographically oriented theories is different, the observations made are also different. Because explanation is of greatest importance, emphasis is placed upon the significance of processes over products, and qualitative changes over quantitative ones. These emphases plus the consideration of context and its effect on observational measures also change the meaning of reliability and validity in such theories. A measure of reliability is not made by giving subjects equivalent forms of a test and seeing how similar their scores are. From an ethnographic view, differences would be expected to emerge because of variations in materials, contexts, etc. In ethnographic studies reliability is achieved if multiple observers with the same focus produce corroborative accounts of the same data. Validity too takes on a different meaning. Because interest is in the description of processes, researchers must ensure that their descriptions and categorizations converge with those held by participants in the event.

In essence, the nature of hypothesis and theory generation from an ethnographic perspective is quite different from the traditional experimental design. As a result, how the theory proposed here can be improved is different also. Its greatest weakness is that it lacks specificity. What is needed is to account in more detail for general laws, and the context in which they may apply. Specificity will not be gained, however, nor certain hypotheses proved by operationalizing concepts and deriving hypotheses to be checked out a priori.

Instead, the present theory provides a framework, a way of seeing. The hypotheses are now very general. Additionally, there may be areas of the process not investigated by the present theory, and these will only be discovered if studies maintain an ethnographic approach. Whether present hypotheses within the theory are right or wrong, Magoon has suggested, they will not be proved by tests setting up null hypotheses which turn out to hold or not hold. He states:

> Instead of traditional null hypotheses tests of a statistical nature being the final arbiters of research findings, one could instead evaluate one account of a situation . . . and weigh this account against other accounts of the proposition that there is no pattern in the situation at all. Gradually one pattern would be recognized as the scientific explanation of that particular type of situation and would probably be recognized as a weak form of prediction. (p. 661)

Thus, the theory of writing proposed here will be improved to the extent that its ability to explain the writing process increases.

This way of thinking is foreign, and perhaps an example from reading would be helpful. The Goodman Model of Reading has been operationalized in part by the *Reading Miscue Inventory* (RMI) (1972). The RMI does not predict a reader's behavior; it is only used to describe a reader's behavior as it occurs. The RMI has descriptive and explanatory power. Its predictive power is weak; all one can predict is how the reader *might* do given a similar piece of material, in a similar setting, etc.

Similarly, a good theory of writing need not predict what a writer will do in a particular setting. Instead, it must be able to explain what the writer does. Hypotheses from the present theory then act to guide researchers' interpretation of ethnographic data, but are not binding. Hypotheses of the present theory may be refined, added to as new data emerges, or rejected as better explanations come to light.

Related Research

Discussed in this section are a number of recent studies of the writing process. If acceptable, the new theory should be able to explain the findings from these studies. Additionally, there should be no data in the studies that would prove the theory invalid. The review of studies may, however, reveal new issues the theory has yet to adequately address, and will obviously reveal research methodology useful in proving the theory.

Nolan: The Birth of a Story

In 1978 Nolan completed a study analyzing the composing processes of a half-dozen able writers in the sixth grade, using videotape techniques. Following each session, the children were asked to view their own videotape and to retrospect on what they were thinking and doing at various times during their writing process. A case study of Noel, one of the six writers, subsequently appeared in *Language Arts*, and supports several tenets of the new theory.

Noel was asked to write a story from a stimulus picture. He studied the picture for fully two minutes, talking to himself as follows:

> Well, it's an apartment and nobody's home. It's all tidy. A small apartment. Now, let's see. It looks kinda misty outside. Mm, a misty day . . . in . . . September. OK. What will the story have in it? A robbery? No, not a robbery. Mm, let's see. A dim room, a cat on a table . . . Say it's a haunted house. Yeah, yeah, it's a black cat too. OK. I'll do that. It's a haunted house. (p. 765)[1]

Note how Noel makes selections of field—an apartment, no one home, tidy, misty outside, a dim room, a cat on a table, a haunted house. These selections of field seem to suggest a tenor and mode to Noel as well; his decisions appear interactive. Details are noticed first which suggest an overriding schemata of a mystery which becomes Noel's global prediction, and develops into more focal ones during his actual writing process. Nolan stated:

> Noel's composing aloud shows that he approached the composition with a general notion in mind. However, details were not planned in advance. Hence, a series of problems related to plot had to be worked out as the writing proceeded. (p. 765)[1]

In creating his main character, Noel "indicated that his mind had ranged ahead of the story piece with which he was immediately concerned" (p. 765). Noel made his character a teenager and not a small child because he knew that later in the

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[1] From "The Birth of a Story" by F. Nolan, *Language Arts*, 1979, *56*, 763-768. Reprinted by permission.

story he wanted the child to be able to scare off others. In this example, Noel seems to demonstrate an awareness of writing as the creation of a consistent text-world model.

In making choices of lexical items, Noel exhibits an understanding of the negotiability of language. He "considered various lexical choices as he converted plot details into words" (p. 766). Nolan suggested that Noel understood that meaning potential could be expressed in various ways. Reflected here too is movement from global and focal predictions, to global and focal mapping of actual language.

Finally, Noel's finished product continued to reflect "mistakes." Nolan stated: "I could see that Noel's mind ranged ahead of the segment actually being written. This caused omission of words from the text, as Noel explained, 'I was thinking ahead of that sentence' " (p. 776).

Exhibited here are two notions related to the new theory. First, Noel's mistakes seem to be the result of overloads to the processing capacity of the brain. Second, Noel's inability to catch these errors in his text can be explained by current reading theories. Rather than reading the graphic display to confirm that his intended meaning was apparent to other readers, Noel used a minimum of the graphic cues available to construct the meaning of his text—an easy task since its meaning was already familiar to him. For Noel, then, his story was finished when he stopped writing—he had discovered his own intended meaning, even though that meaning was not always clear to others.

Graves, Calkins, and Sowers: Developmental Changes in the Writing Processes of Children

Building upon his earlier work, Graves et al. (1976) have investigated how changes occur in children's writing processes. In the study, the writing development of sixteen children was documented over a two-year period. Subjects were chosen for their diversity from the first and third grades at Atkinson Academy, the public school for Atkinson, New Hampshire. Results from this study, which was ethnographic in design, have been published as an ongoing series of articles in *Language Arts*. To date these articles can be grouped around four topics discussed within the new theory of the writing process. Within the range of these topics, Graves et al.'s findings will be discussed in terms of (a) their support for the new theory, (b) their contribution to the further extension of the theory, and (c) their points of incongruity with the new theory.

Discovering elements of the writing process. In "A Six-Year-Old's Writing Process: The First Half of First Grade," Sowers (1979) discussed the writing development of Sarah, a beginning writer. An observation made by Sowers was that Sarah engaged in drawing and talking to a researcher or another peer before beginning to write. Sowers classified these activities as part of a prewriting stage. Though Sowers' conceptualization of this act as part of a prewriting stage is

questionable, it does provide documentation for portions of the new theory. Sarah seems to demonstrate an understanding of the function of symbol systems and their negotiability. She uses drawing and talking to make global and focal predictions of field, tenor, and mode that are later instantiated into language.

At the same time, Sarah demonstrates an understanding that these activities are not really confined to a particular phase or time within her writing process. Sowers demonstrated particularly, in a story Sarah wrote about a little girl overcoming her fear of the dark, how Sarah capitalizes on the transactive nature of symbol systems. Sarah began with a drawing in which she worked out schemas to be involved in her story. She instantiated these into language, and moved once again to make a new drawing. Worked out in the drawing was the next part of Sarah's story, which she then verbalized before writing. Sowers stated the following in generalizing from Sarah to other members of the first-grade class: "Writers discover their meaning while they write because they think and play on paper" (p. 834). Sarah understands that she can use signs to mediate her relation to her environment, and that, additionally, those she creates can take on significance themselves, suggesting to her further transactions.

A second observation Sowers made about Sarah's writing process is related to her world knowledge. Sowers observed that:

> When Sarah is restless, she is writing a story with action and a sequence of events. When she is content to remain at the writing table, she is writing a quick, simple book which lists as many of the hero's good qualities as Sarah can think of before she fills the six pages. (p. 831)[1]

By her very physical actions, Sarah seems to demonstrate two of the five theses in the new model, namely, that transactions in writing are facilitated if they closely match world-knowledge entries, and that they are also facilitated if they are attachable to major nodes of applicable schemas.

A third set of observations Sowers made related to Sarah's strategies for dealing with the limits of her processing capacity. "When Sarah attempts a new step in writing, the burden may alter her syntax, penmanship, spelling, or any recently learned feature of her writing" (p. 834). Sowers quoted Graves who had observed that when children tried new approaches in their writing, other areas of their writing, in which they had previously demonstrated competence, suffered. Sowers explained this phenomenon in terms of attention: "A new writing problem—usually one the writer creates in order to accommodate new information—commands more attention. Less attention is left to solve other problems. Syntax, spelling, or punctuation may suffer" (p. 834). The new theory would predict such observations and offer a similar explanation. Sarah seems to understand that the primary focus in writing is the creation of meaning. Even when trying out new strategies she does not abandon this focus. When her processing capacity is taxed, she concentrates on those elements central to the creation of meaning.

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[1] From "A Six-Year-Old's Writing Process: The First Half of First Grade" by S. Sowers, *Language Arts*, 1979, *56*, 829-835. Reprinted by permission.

While a more proficient writer might go back to revise, Sowers commented that the first-graders were less willing to do so. Data by Hill (1980), however, would suggest even preschool children revise. The difficulty here may be in researchers' applications of adult standards: Young writers are capable of revision to the extent that they control an understanding of what standard written products should resemble.

The transactive nature of writing. From an article by Calkins (1979b), entitled "Learning to Throw Away," one can see how a third-grader developed a more refined sense than Sarah had of the transactional nature of the writing process. Calkins observed in reference to Rebecca's writing: "The process of selection continues as Rebecca rereads, then rewrites, what she has written. As her pen moves down the page, Rebecca uncovers new implications, new nuances. When she writes, Rebecca discovers what she knows" (p. 749). In addition, Rebecca demonstrates her growing understanding of the relationships between readers and writers and of how meaning is created from text; she implies or suggests rather than just tells through her prose.

From the perspective of the new theory, Rebecca uses reading to confirm or disconfirm her predictions, and to suggest still more ideas. She seems to recognize writing as the creation of a cybernetic system, and lets her text at any one point guide her future predictions. She also seems to view the whole process as transactive, and in fact capitalizes on that to keep her going. She demonstrates by her willingness to revise during writing that she is aware of the third, fourth, and fifth theses posited by the new theory. In the creation of her poem about a snow king, Rebecca demonstrates knowledge that transactions in writing can become confused, because they are capable of close association in world knowledge. She makes decisions about which ideas to make explicit and which implicit, counting on readers to make needed inferences. In her willingness to throw away, Rebecca demonstrates an understanding that transactions in writing may need to be altered to fit more closely with one's world knowledge. Recognizing the malleability of writing, Rebecca uses writing as well as art to think and work out her ideas.

Calkins believes "Rebecca [has] progressed from letters to words, from words to phrases and episodes. Now she strings these together" (p. 750). Calkins also seems to suggest that with time writing had become easier for Rebecca because it was more automatic. The new theory stands in disagreement with these views.

The theory would argue that a child's writing process develops as a series of such steps only when adult views of written products are imposed too early. At the root of automaticity is a similar assumption. Instead, the new theory believes children's development proceeds on many planes at any one time, not from the mastery of parts to a whole but, rather, always focusing on the whole and gradually refining it (see Baghban below).

The role of adults (and peers) in children's writing development. In two articles, "What Children Show Us About Revision" (Graves, 1979) and "Andrea Learns to Make Writing Hard" (Calkins, 1979a), Graves and Calkins documented

the roles adults can play in children's writing development. Graves states: "In this case study of children's writing it is sometimes difficult to know where development ends and instruction begins. The dilemma is not unlike the heredity-environment issue. Environment activates the genetic potential, just as the teaching environment interacts with the child to activate development" (p. 316). While a discussion of this topic can lead to an analysis of basic problems in Graves' research, it is necessary to focus first on an important insight.

Both Graves and Calkins discuss teacher interventions in light of how they lead children to refine the revisions they are willing to make in writing. Brian, a third-grader, wrote fluently—mostly fiction—and revised little. Graves reported how Brian's teacher, wanting him to learn more about the role of revision, asked him to write about a personal experience. She believed revision was easiest to learn when it developed in relation to writing about one's own experiences. Additionally, she asked him to write three leads, or starts, to his piece. Doing so, Brian produced not a three-sentence story, but three separate leads that were partial revisions of one another. A week later he did the same but, more importantly, discovered in the second lead that he could simply cross out an unwanted phrase. Up to this time Brian had erased all errors. Calkins reports Andrea's similar refinement of the revision process through teacher interventions (see Figure 4.1).

This sort of direct teacher intervention has occurred throughout Graves' research and has led to some confusion as to whether his work should be regarded as an ethnography of writing instruction, or an ethnography of children's writing development. It does not seem as if Graves views this confusion as a serious problem; he prefers instead to see development and instruction as intertwined. The problem is that such a view may lead to serious mistakes in documenting writing development in children. What may occur naturally may be very different from what happens with the addition of an instructional catalyst. Nevertheless, this work has suggested—though one might wish it were more naturalistically pursued—how transactions in the writing process may first be external and overt, caused by interactions with and feedback from others, then later become internal and covert.

Moving underground. Graves described what happens to children like Brian who discovered the powers of revision as follows:

> Once crossing out enters the picture for Brian or other children, the units of revision expand. To erase an entire line or even a phrase is a large task and usually quite messy. The draft now takes on an important, temporary quality. Words can be written in; others excluded. The section may be written from three to four times before the words are true to the meaning of the personal experience. Furthermore, the child realizes print is not indelible, does not have to be correct the first time, is a means toward a more permanent end.
>
> Once children like Brian feel control of the writing process . . . a Copernican revolution has taken place. The center of control is more in the child's hands than the teacher's. Output doubles, revision increases ten-fold, sentences

Teacher	Andrea
1. Tells her to reread paper and circle spelling mistakes	1. Andrea rereads and finds logic problem.
2. Says it's ok to mar paper	2. Andrea draws arrow, inserts line
3. Tells her to write shorter pieces	3. Andrea begins a piece more often, and with each beginning faces obvious decisions--topic, plot, beginning.
4. Encourages her to plan and draw topic before writing	4. Extensive revision occurs within prewriting part of the writing process.

Teacher	Andrea
1. Teacher prompts Andrea to write three leads.	1. Each lead is more active, immediate.
	2. Andrea selects her beginning from a number of choices.
	3. Andrea writes in a different voice, with different, more abstract sequence.
	4. Andrea is troubled by how to fit things in. She rereads often. Writing is hard.
	5. Andrea decides to relegate handwriting to a second copy, and not to worry about words and copy during the first draft.
	6. When Andrea copies she makes unconscious revisions.

Figure 4.1. Teacher intervention and its effect on Andrea's writing process. (From "Andrea Learns to Make Writing Hard" by Lucy McCormick Calkins, *Language Arts*, 1979, *56*, 569-576. Copyright 1979 by National Council of Teachers of English. Reprinted by permission.)

> are crossed out, paragraphs rearranged. Word unit revision is practiced only as a touch-up process in the final draft. (p. 315-316)[1]

With Andrea, Calkins observes how, once introduced to revision, Andrea's changes became conscious and overt. She began to circle awkward transitions and smooth them out in her final draft. A week later, she discovered the need to move an entire paragraph and to eliminate another. Calkins stated, "Words have taken on a malleable, claylike property. Andrea puts language on paper in order to sculpt and shape it" (p. 574). Gradually, over a period of two months, Andrea began to revise more and more internally. "What was once not existent became

[1] From "What Children Show Us About Revision" by D. H. Graves, *Language Arts*, 1979, *56*, 312-319. Reprinted by permission.

unconscious, then conscious and overt. Now it moves underground, and becomes covert" (p. 575).

Suggested here is movement from external, socially induced, high-level refinements within the writing process, to similar refinements that are internal and self-induced. Vygotsky suggested a similar developmental sequence for all higher mental processes. In this sense, Graves' work has also suggested ways the present model might be further refined.

Yet at the same time, as a result of instruction, one wonders if Andrea's revision process has gone too far underground. Calkins reported at the end of the article that compared to 14.5 words per minute, and 400 in a sitting at the beginning. Andrea now averaged only six or eight words a minute and one hundred words in a sitting (p. 575-576). Has Andrea become so aware of the need to revise and consider one's readers that she has put herself in danger of reaching a bottleneck where she produces little text at all? We do not know.

The issue of egocentrism: conventions, readers, products. In "Children Learn the Writer's Craft," Calkins (1980a) discusses how young children change from play to craft in the writing process. Writing becomes craft when children attend to the mastery of conventions, concern for readers, and final products. Very young children, however, view writing as play not craft. From her observations of Alex, Calkins states: "In his egocentricity, Alex does not—indeed, he cannot—get outside himself and consider what topics his readers might enjoy" (p. 209). Instead, for young children like Alex and Sarah at the beginning of first grade, writing is only play.

The new theory does not discuss egocentrism; it is simply not a research concept. Instead, young writers are thought to discover through play that writing can be used to represent and negotiate their own relationship to the environment. Additionally, they learn that such meanings can be communicated not only to themselves but to others. Children are aware of readers if one looks at the whole of their writing process within a context of situation. What they must develop is an understanding of how meaning is constructed in and from a graphic display alone, i.e., of the elements of textuality. That children do not pay attention to conventions and products may result not from their egocentrism but from our misuse of an adult standard that fails to gain an understanding of what is seen through children's eyes. Children may be unaware of how to deal with conventions or correcting products, and wisely sense that within the limits of their processing capacity, attention to them would interfere with the creation of meaning.

Added insights from Graves' research. Calkins (1980b) reported findings in an area not extensively handled by the new theory and in so doing suggests concepts that need to be accounted for. These concepts concern the relationship between the functional development of writing and punctuation.

In the study, Calkins compared the punctuation knowledge and development of children in two different classrooms. In one classroom, children were learning punctuation in context—through writing; in the other they were taught punctua-

tion in isolation—through daily drills and workbook exercises. Calkins noted differences in the two groups' knowledge, uses, and attitudes toward punctuation. Children from the writing classroom viewed punctuation as an important device to help readers understand writing. Fewer than 25% of the students in the non-writing classroom reported that they liked punctuation. Children in the writing classroom based decisions about where and what punctuation to use on the function of their writing. Students from the isolation group based their decisions on rules for which, when questioned further, they demonstrated little understanding. Children in the writing classroom also demonstrated knowledge and use of a wider range of punctuation marks including marks used to edit their own writing. When asked how they came to be aware of and use these new marks, they talked about noticing marks and how they are used in books, other students' papers, billboards, magazines, and so on.

This study has suggested that when punctuation is taught in isolation, students do not fully appreciate the need for such conventions nor really understand how to use them. Knowledge is limited to memorization, not understanding, which is not always transferred to one's own writing. On the other hand, children who learn to punctuate while engaged in their own writing, quickly learn to appreciate the variety of needs such conventions serve. Employing punctuation more in their own writing, they learn through risk taking and feedback how to use it appropriately, and they more fully understand how it is related to meaning.

Baghban: Language Development and Initial Encounters with Written Language: A Case Study in Preschool Reading and Writing

The research of Graves et al. has suggested how children's writing begins to develop in first grade. Baghban's study (1979) however, demonstrated that for children living in a literate environment, the writing process actually begins to develop much earlier than first grade. While to the untrained observer, the early writing of Baghban's daughter, Giti, (from birth to 36 months) might seem to be only scribbles, Baghban demonstrated that by knowing the context and actual process by which Giti's texts were produced, many more meaningful insights could be gained. These insights lend support to the new theory.

Most apparent in Baghban's observations were the role hypothesis-testing strategies played in Giti's written language development. While the new theory suggests those of confirming, disconfirming, and perceiving anew, Baghban further differentiated such strategies into sampling, guessing, labeling, associating, confirming, categorizing, generalizing, accommodating, and assimilating. Her work documented how a child's interactions with more proficient writers in natural settings supported use of these strategies. For example, Giti first developed an interest in writing as an outgrowth of seeing her parents use pen and paper. Her attempts to write were constantly responded to by (a) providing positive feedback, (b) asking her questions about the meaning of her texts, (c) trying to interpret her attempts at writing, and (d) providing her with more information about written language. It is important to note that these responses were not to point out missed transactions to Giti, but to respond to her texts as meaningful (tracking). In this manner, Giti's parents and grandparents helped her extend her

notions of what it means to communicate, to understand how function and form operate in writing, and to develop an interest in knowledge shared by writers and readers to interpret text. The most interesting example of Giti's use of hypothesis-testing strategies and interacting with other writers, was her development of a gradual distinction between writing and art. Note Giti's progress in Figure 4.2.

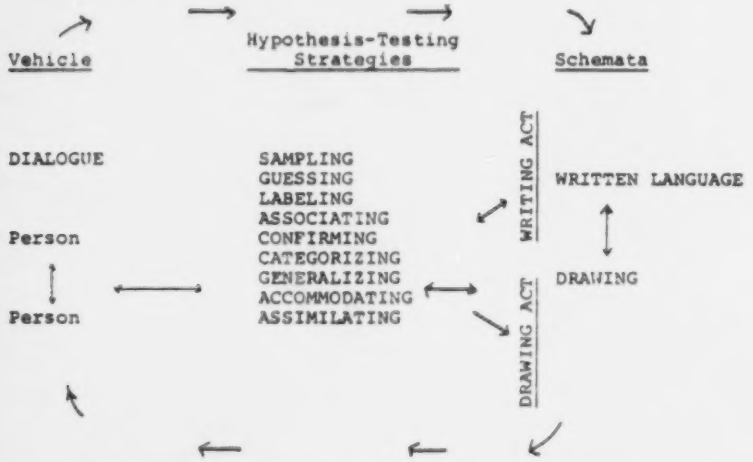

Figure 4.2. Model of the development of written language and drawing schemata. (From *Language Development and Initial Encounters with Written Language: A Case Study in Preschool Reading and Writing*, p. 131, by Marcia Joan Moses Baghban. Copyright 1979 by Marcia J. M. Baghban. Reprinted by permission.)

Baghban also discussed the value of play to Giti's writing development. In her earliest attempts at writing, Baghban observed that Giti was more interested in the process of writing itself than whether her attempts communicated or brought pleasure to others. However, at about the time Giti began to read logos, she also became a reader/observer of her own written texts, and subsequently developed an interest in how text communicates. Through changes Baghban documented in Giti's games of writing letters and playing waitress, one can see how Giti's writing progressed on many fronts at once, and how changes in one front interacted with and led to growth in others.

Finally, Baghban's case study approach allowed her to document how Giti used her abilities as a speaker and reader to increase her knowledge as a writer. Through her oral language and growing knowledge as a reader, she began to test out with more proficient writers how messages are negotiated in print. In this way Baghban begins to challenge educators' traditional notions of writing readiness.

Pianko: A Description of the Composing Processes of College Freshman Writers

In 1977, Pianko completed a study documenting the writing process of 17 college students. Ten of the students chosen to participate in the study were remedial

writers, and seven were "traditional" or average writers. The students each wrote five papers, a week apart, each time on a topic supplied by the researcher or developed on their own.

Pianko found that while there was a significant difference (45 seconds/$p < .05$) between the amount of time spent prewriting by each group, both traditional and remedial students did little. She stated: "Some students went beyond a general approach and thought about a few ideas they might consider in the writing (mental planning) but none of the students had a complete conception of what they were going to write when they began writing" (p. 9). This finding would support the view from the new theory that writers engage in global and focal predictions, and mapping. While writers may have some global predictions about their writing, specific focal selections are made more closely to the point of utterance. Pianko reported that "all of the subjects said that whether they do mental or written planning before the actual composing, they do most of their planning during the actual composing" (p. 9).

Pianko found no significant differences between remedial and traditional writers' composing times, rates of composing, rereading times, revisions, or drafts. However, she did find differences significant at the $p < .01$ level between the number of pauses, and rescannings of remedial and traditional writers. In both cases traditional writers did more. These results indicate that while remedial and traditional writers had similar composing rates (words/minute), remedial writers spent more time putting words on paper, while traditional writers spent more time pausing and rescanning what they had written. Pianko explained that "only a very small percentage of the remedial students, when questioned about their concerns when writing, responded that they were worried about the development of the content, and only a few expressed concern for getting their ideas across" (p. 13). Instead, in post-writing interviews these students revealed that they were concerned about mechanics, usage, correct wording, and spelling. Interestingly, all the remedial writers were enrolled in remedial writing classes that made them quite aware of the missed transactions they committed during writing. In contrast, traditional writers were more concerned with getting their ideas across.

These findings would tend to support the new theory. However, the theory offers a much richer explanation of rescanning—called "reading" in the theory proposed here—than is suggested by Pianko. Rescanning/reading allows traditional writers to confirm their prior texts and to tap into the cybernetic system they have under creation. In basic agreement, Pianko stated, "traditional students were pausing to plan what to write next, rescanning to see if their plans fit, and then pausing again to reformulate" (p. 14). In contrast, the remedial writers less frequently rescanned what they had read. During pauses they were more likely to glance around the room, stare at nothing, or engage in diversions; and when they did rescan, they focused on grammar.

Pianko found it was not that remedial writers did not engage in the same processes as traditional writers; the processes were of much shorter duration and of poorer quality. From Pianko's data the comparison table in Figure 4.3 can be constructed to illustrate this point. One might argue when looking at this table

that underlying remedial writers' poorer sense of style, purpose, parameters, and getting ideas across is a lack of audience awareness. However, the new theory would argue that more is involved. A teacher may make these students sensitive to reader awareness yet see little change in their writing. It is not just students' sense of their readers that needs to be improved; changes must be induced in students' actual writing strategies. Pianko's work would suggest that these students need to learn to monitor and tap into the text they are creating, and to understand the relationships between mechanics, usage, spelling and first getting ideas on paper.

Concern for	Remedial	Traditional
style	30.0%	85.7%
purpose	30.0%	57.1%
parameters	40.0%	71.4%
getting ideas across	30.0%	71.4%
mechanics and usage	30.0%	14.3%

Figure 4.3. Qualitative differences between comments of remedial and traditional writers on their writing process. (From "A Description of the Composing Processes of College Freshman Writers" by Sharon Pianko, *Research in the Teaching of English*, 1979, *13*, 5-22. Copyright 1979 by National Council of Teachers of English. Reprinted by permission.)

Perl: The Composing Processes of Unskilled College Writers

Recently Perl (1979) completed an in-depth analysis of the writing process of five unskilled college writers. Particularly unique to her study were the methods she developed for analyzing the composing process as it occurred over time, and her use of miscue analysis to examine writers' rereadings of their finished products during final editing.

Like Pianko, Perl found each of the five writers spent little time prewriting. The planning strategies they did use, she found, fell into three principal categories:

1. General planning (PL)—organizing one's thoughts for writing, discussing how one will proceed.
2. Local planning (PLL)—talking out what idea will come next.
3. Global planning (PLG)—discussing changes in drafts (p. 320).

Each of these strategies can be explained and would be predicted by the new theory. The first and third planning strategies represent writers' search for an overriding schemata (global prediction) to guide their efforts. The second strategy represents attempts to begin establishing relevant schemas and subschemas within an overriding schemata.

While some writers engaged in these prewriting activities others did not. Instead, some began without any clear sense of direction and made decisions while writing. Perl commented that it seemed that these starts, thought directionless, helped these unskilled writers begin to plan what ought to come next:

> In these instances, writing led to planning which led to clarifying which led to more writing. This sequence of planning and writing, clarifying and discard-

> ing, was repeated frequently in all of the sessions, even when students began writing with a secure sense of direction. (p. 330)[1]

Perl suggested that this finding might challenge the belief that unskilled writers write prematurely, before planning precisely what is to be said. Instead, she said, her data suggested

> that the developing and clarifying of ideas is facilitated once students translate some of those ideas into written form. In other words, seeing ideas appear enables students to reflect upon, change and develop those ideas further. (p. 330)[1]

This finding also would support the new theory which argues that text cannot be worked out totally a priori because of the limited processing capacity of the brain. Perl failed here, it would seem, to make the connection between "seeing ideas on paper" and the role that reading plays in the process. Nevertheless this notion is similar to one thesis of the new theory. It argues that reading of one's own text helps the writer to confirm or disconfirm predictions, to tap into the cybernetic system under creation, to let that system guide future meaning choices, and to trigger new transactions.

As a result of her analysis of the five writers, Perl developed two major hypotheses about the writing process. One was that rather than conceiving of the writing process as occurring linearly, "retrospective structuring" took place. Perl defined retrospective structuring as "going back to the sense of one's meaning in order to go forward and discover more of what one has to say" (p. 334). The new theory suggests that schematas working within the writing process are best thought of as transactive and not involving retrospective structuring, which also implies a certain type of linearity. The underlying problem is that a view of the writing process as occurring linearly or retrospectively is really describing the written products. If, however, one considers the actual processing that occurs, writing is more interactive.

Perl's second major hypothesis related closely to her first. She offered the conjecture that composing always involves some measure of both construction and discovery. She states:

> Rereading or backward movements become a way of assessing whether or not the words on the page adequately capture the original sense intended. Construction simultaneously affords discovery. Writers know more fully what they mean only after having written it. In this way the explicit written form serves as a window on the implicit sense with which one began. (p. 331)[1]

In relation to editing, Perl offers several interpretations of her data that do not agree with the new theory. From analysis of students' miscues when reading their final texts, Perl concluded that these five unskilled writers characteristically read their papers from internal semantic or meaning models. She suggests that reading, defined as a process of selecting minimum cues to construct meaning,

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[1] From "The Composing Processes of Unskilled College Writers" by S. Perl, *Research in the Teaching of English*, 1979, *13*, 317-336. Reprinted by permission.

was responsible for why written products of unskilled writers appeared so incomplete. While this could be true, Perl failed to recognize that it is this very construction of meaning, using only minimal cues, that is very much responsible for the transactive quality of writing, i.e., its ability to help one discover meaning through the process itself. That Perl was confused on this issue seems evident, for while she was on the one hand critiquing students' reading from a meaning model, she also stated, "Editing intrudes so often and to such a degree that it breaks down the rhythms generated by thinking and writing" (p. 333). These issues suggest a need for the new theory to explain more explicitly the different degrees of attention to cues that may occur, and when each is appropriate.

Like Pianko, Perl believes unskilled college writers worked from an egocentric point of view. While indicating some concern for readers, they seemed most frequently to take their readers' understandings for granted. Perl's finding here might have been more an artifact of the context of situation than of egocentrism. Students' writing tasks had been real assignments from a social science class. Their seeming lack of sensitivity might not have been a true reflection. Realistically, they were writing for the professor as their reader. Certainly, students might rightfully make assumptions about information their professor already possessed. It is understandable that these might be unclear to a researcher who had not been present through all the course to monitor information exchanges that had occurred.

Flower and Hayes: A Problem-Solving View of the Writing Process

Believing that writing is a complex cognitive skill, Flower (1980) and Flower and Hayes (1977, 1980) have studied the writing process using recent insights from cognitive psychology, particularly from problem-solving research. Using protocol analysis where writers were asked to think aloud as they composed, Flower and Hayes categorized responses compiling a group of strategies used by good writers to generate a finished text (see Figure 4.4). They divided the writing process into three parts: planning, generating ideas in words, and constructing for an audience. These parts were not the same as stages, a point that gradually becomes clearer in the remarks that follow. Under each part were heuristics that good writers employed. Flower and Hayes defined a heuristic as "an alternative to trial and error. It is simply the codification of a useful technique or cognitive skill. It can operate as a discovery procedure or a way of getting to a goal" (1977, p. 450). This use of the term "heuristic" is similar to the use of "transactions" in the new theory. In essence, what Flower and Hayes did was to document a number of the transactions within the repertoire of good writers.

In planning, Flower and Hayes found that good writers relied on two heuristics: setting up a goal, and finding operators. The setting of a goal is much like writers' development of global predictions in the new theory. Setting a goal, like making a global prediction, sets planning in motion. Flower and Hayes were careful to note that a plan is different from an outline. A writer controls a plan and can change it as the need arises; outlining usually does not allow for such flexibility. Operators, like focal predictions, provide the means for achieving one's goal and global prediction. Flower and Hayes seemed to feel that planning alone occupies only a short period within the writing process.

PART ONE: PLANNING

I. Plan

1. Set up a goal
2. Find operators (i.e. subgoals, built-in directions which help you reach a goal.)

PART TWO: GENERATING IDEAS IN WORDS

I. Play Your Thoughts

1. Turn off the editor and brainstorm
2. Stage a scenario
3. Play out an analogy
4. Rest and incubate

II. Push Your Ideas

1. Find a cue word or rich bit
2. Nutshell your ideas and teach them
3. Tree your ideas
4. Test your writing against your own editor

PART THREE: CONSTRUCTING FOR READERS

I. Ends

1. Identify a mutual end you and the reader share
2. Decide on your own specific ends

II. Roadblocks (i.e. expectations or assumptions, negative attitudes, or crucial gaps in knowledge that would block your mutual ends. What are you going to do: confront them, detour, or ignore?)

III. Means

1. Develop a rhetorical strategy
   a. Writer-based prose
   b. Reader-based prose

2. Test your rhetorical strategy

Figure 4.4. A heuristic strategy for analytical writing. (Developed from "Problem-Solving Strategies and the Writing Process" by Linda S. Flowers and John R. Hayes, *College English*, 1977, *39*, 449-461. Copyright 1977 by National Council of Teachers of English. Reprinted by permission.)

Once writers have a goal in mind and have begun to think of some operators, writing should begin. Proficient writers, they found, generated ideas in two basic ways: playing out thoughts, or pushing them.

In playing out thoughts, good writers characteristically brainstormed, staged a scenario, played out an analogy, and/or rested and incubated. At least three of these heuristics have some similarity to the theory developed in Chapter III. Brainstorming relies on the fact that concepts are linked in memory, i.e., form schemata. Through brainstorming (Flower and Hayes emphasized this should be done itself through writing) new ideas can be generated. In the new theory, the

same is true; schematas are interactive, and those developed at one instant may lead to others during the writing process. Staging a scenario, a second heuristic, is described as deciding upon readers, and generating text by imagining what might be asked. This technique is very similar to writers' use of interpretive procedures within the new theory. A third heuristic is rest and incubation, also mentioned in the new theory.

Flower and Hayes found that writers, to push their ideas, used four additional heuristics: finding a cue word or "rich bit," "nutshelling" ideas and teaching them, "treeing" ideas, and/or testing their writing against their own editor. Finding a cue word or rich bit is similar to brainstorming. The difference is that in brainstorming and other methods of playing out thoughts, one is simply assembling background knowledge already in one's memory. In finding a rich bit, writers go a step further:

> the particulars a rich bit stands for may only be related in some vague or as yet undefined way. If you have not yet pushed those relationships into language, it would not be accurate to call them an idea. Rich bits are like any intuition; they need to be pushed and examined if they are going to yield solid ideas. (1973, p. 456)[1]

Both the idea of pushing a rich bit and nutshelling ideas are similar to the process of instantiation developed in Chapter III. These heuristics suggest that schematas are not necessarily stored as language and that good writers are aware of language's negotiability.

The heuristic of treeing one's ideas suggests how function and form are related in the minds of good writers. Flower and Hayes found that good writers "pull an outline out of the material they generate, rather than write to fill an outline in" (1977, p. 456). The two researchers used tree diagrams to illustrate this concept. It is unclear, however, whether they actually found writers using "trees" per se. Such trees allowed good writers to see more graphically how their own ideas were related, and areas where they needed to do more thinking and correcting of flaws.

The theory developed in Chapter III suggests a similar relationship between function and form; they cannot be separated and still work together for writers. According to the new theory, outlines themselves would represent a form of writing in which writers' ideas are still largely implicit, the degree of explicitness worked out as writers continue to develop more complete graphic print displays.

The heuristic of testing your writing against your own editor begins to recognize the role of reading in the writing process. Flower and Hayes' view of this role is somewhat limited, however. They stated,

> There are two techniques which will help you play the role of an objective reader who sees only what is written—not what you *meant* to say. The first is to read your prose carefully, word for word, as if you had never seen it before, and let its logic, syntax, and vocabulary lead you where they actually go. Read only what is on the page and cut out the well-inflected oral performance

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[1] From "Problem-Solving Strategies and the Writing Process" by L. S. Flower and J. R. Hayes, *College English*, 1977, 39, 449-461. Reprinted by permission.

> that goes on in your head when you *skim* over your own prose. If you let it, the inner voice will create emphasis, jump over the unclear bits, and fill in extra meanings from memory, while it lets you nod in agreement at familiar ideas and enjoy the pleasure of your own confirmed anticipations.
>
> An even more powerful technique, if you can find a place to do it, is to read your own writing out loud. (1977, p. 568)[1]

The theory developed in Chapter III would suggest reading in the writing process serves a far richer purpose than editing alone. Writers, when reading their texts, are changed from who they were before beginning the process by the sheer fact that they have engaged in it. In reading their texts they can not only confirm their intended meaning, but must tap into the cybernetic system under creation in order to continue, and to suggest new meanings not previously apparent.

The third area of heuristics found by Flower and Hayes relates to constructing for readers. The two recognized a difference between early drafts, or writer-based prose, and later drafts, or reader-based prose. Heuristics here fall into three types, those involving the attainment of ends that will be clear to potential readers, the possibility of reader roadblocks that may hinder understanding of writers' messages, and deciding on and testing rhetorical strategies.

In recognizing a difference between writer-based and reader-based prose, Flower and Hayes suggest that it was frequently not possible for writers to generate ideas and make every consideration for readers at the same time. As in the theory proposed in Chapter III, this observation recognizes limits on the mind's processing capacity during writing. Good writers seem to understand that often they cannot make several decisions at once. In terms of ends, roadblocks, and means, what writers do is consider knowledge of interpretive procedures and textuality shared with potential readers.

Flower and Hayes (1980) reported a second study also employing protocol analysis that dealt with differences in how good and poor writers defined a rhetorical problem. The good writers were a group of English teachers on one-year N.E.H. grants to study writing; the poor writers, college students who had gone to the Communication Skills Center for general writing problems such as coherence and organization. That these students were poor writers was acceptable to Flower and Hayes without further testing. Both groups of writers were given the following task: "Write about your job for the readers of *Seventeen* magazine, 13- 14-year-old girls" (p. 23). In analyzing the protocols of both groups, Flower and Hayes found three differences between the good and poor writers:

1. Good writers respond to all aspects of the rhetorical problem. . . .
2. In building their problem representation, good writers create a particularly rich network of goals for affecting their readers. Furthermore, these goals based on affecting a reader, also helped the writer generate new ideas. . . .

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[1] From "Problem Solving Strategies and the Writing Process" by L. S. Flower and J. R. Hayes, *College English*, 1977, 39, 449-461. Reprinted by permission.

3. Good writers represent the problem not only in more breadth but in depth. (p. 29-30)

These characteristics of good writers are similar to those proposed in Chapter III. Flower and Hayes described the rhetorical problem as including writers' representations of their own persona, readers, the assignment given, goals involving readers, and the text. These are similar to context of situation, and writers' selections of field, tenor, and mode. That good writers seemed to develop a rich network of goals that helped them generate new ideas is similar to the notion of the creation of a cybernetic system that acts to fill in and generate future ideas. That good writers represented problems with greater depth is explained in the new theory by knowing which parts of a text should remain implicit and which explicit.

Basic problems with this study must also be examined in light of the new theory. It was uncertain whether the student writers involved in the Flower and Hayes' study were indeed poor writers, or only seemed to perform less well on this particular task, which was much different for college students than adult teachers. That students spent little time analyzing their readers is not surprising; certainly they have far more recent and intimate knowledge of 13- and 14-year-olds than adults 20 years older. Equally true, is that the college students might naturally have made a number of assumptions about readers' shared understandings. Teachers, however, in explaining their jobs to 13- and 14-year-olds could make fewer assumptions. The judgment concerning the better writing, then, was dependent upon one's standards. To an objective outsider the products of the adults perhaps seemed to communicate better, yet a group of 13- and 14-year-olds might not agree.

Flower and Hayes stated that "the main conclusion of our study is this: good writers are simply solving a different problem than poor writers" (p. 30). Indeed, it is true here that the task was not the same for each group. That one group performed more poorly than the other depends on the criteria applied. Additionally, simply because the college writers handled this particular task more poorly does not necessarily mean they should be tagged poor writers. This label could only be documented if the students were weak on several different writing tasks instead of just one.

In a separate article, Flower (1979) expands on the notion of writer- and reader-based prose. The traditional assumption is that writers should first think out what they want to say, then write it. Instead, Flower concluded, based on her observations of effective writers, that they "do not simply *express* thought but *transform* it in certain complex but describable ways for the needs of a reader" (p. 19). Writers' first attempts at creating meaning are frequently "writer-based prose which reflects the associative, narrative path of the writer's own confrontation with her subject" (p. 2).

While the new model would agree that in early drafts writers' attention may be more focused on expressing personal meaning than conveying it to readers, it

would not suggest such writing is always narrative. Flower then compared writer-based prose to Vygotsky's concept of inner speech and to Piaget's concept of egocentrism. She outlined three characteristics of writer-based prose: (a) it is highly elliptical, (b) words used become saturated with sense, and (c) prose is "clearly a natural, less cognitively demanding mode of thought" (p. 22). The new theory would disagree with this point. Writer-based prose is not cognitively less demanding when one is in the process of generating ideas. Such tasks may require so much of the writer's processing capacity that little is left for readers' considerations.

Matsuhashi: A Video Time-Monitored Observational Study: The Transcribing Behaviors and Composing Processes of Four Competent High School Writers

In this study, Matsuhashi (1980) developed a theory of composing in writing which she substantiated, in part, by analyzing the processes of four competent 12th-grade writers across four modes of discourse. In looking at these students' writing, Matsuhashi focused most on the lengths of pauses and the places of their occurrence. While this study produced a wealth of data, only those results found most relevant to the new theory will be discussed.

From only four writers engaging in five tasks, Matsuhashi logged a total of 18,000 pauses. These pauses included all those resulting in the forward or backward development of the text. Across the writers, Matsuhashi found an upward trend in mean pause lengths for copying and each of the four discourse types. The length of pauses during copying were at least twice as short as those for any of the four discourse types, giving credence to the commonsense notion that composing is a more time consuming and difficult process than copying. Of the four discourse types, mean pause length increased from reporting, to expressing, to persuading, to generalizing.

In submitting her data to further statistical scrutiny, Matsuhashi decided (a) to work with only those pauses resulting in the forward movement of the graphic display, (b) to drop those pauses shorter than one second in duration, and (c) to exclude the expressive task from further analysis. These decisions left the researcher with 4,146 pauses to analyze. She then divided students' written products into T-units, allowing her to categorize pauses as occurring before or within T-units. For the entire group of 4,146 pauses she found statistically significant differences between mean pause lengths for reporting and generalizing, and for reporting and persuading, but not for generalizing and persuading. These results support, using other than syntactic measures, that discourse aim has an effect on the composing process.

Matsuhashi then analyzed 1,451 pauses of the 4,146 pauses because they involved features within one or more of the additional analytic schemes she decided to use. This remaining group of pauses was divided into those occurring before T-units, and those occurring within T-units. Matsuhashi found no significant differences in lengths of pauses within T-units across the three discourse

aims. She did, however, find differences in the length of pauses before T-units. She believed her findings supported the thesis that "the major planning unit for discourse is at the global level, planning for sentences and groups of sentences rather than the parts of sentences" (p. 356). This finding lends support to the notion of global prediction developed in the new theory.

Analyzing still further, Matsuhashi examined length of pauses prior to T-units for statistical differences based on their level of abstraction, whether they began a paragraph, if they contained an initial modifying structure, their sentence role, and the nature of the lexical cohesion of the T-unit's subject. Pauses within T-units she analyzed for type of clause, non-clausal items, and the nature of the lexical cohesion of the T-unit's object. In addition to these analyses across all the samples, Matsuhashi looked for statistical differences on these same features according to each of the three discourse types. For example, in considering level of abstraction, she analyzed her data first to find whether mean pause length was significantly longest for superordinate T-units, subordinate T-units, or coordinate T-units. Finding that pause length was significantly longer for superordinate T-units, she reasoned further that pause length before superordinate T-units might be longest in the generalizing task, a hypothesis she found to be true.

The researcher found no significant differences in pause lengths according to sentence role, nor between T-units beginning with an initial modifying structure and those that did not. However, she did find statistically significant differences when she examined pause lengths for initial modifying structures considering each discourse type. The mean pause length of T-units beginning with an initial modifying structure was twice as long in generalizing (15.28 seconds) as in reporting (7.23 seconds). All these results provide evidence of the interplay among variables within the writing process as the new theory would suggest.

Finally, of interest to the present study was Matsuhashi's cohesion analysis of T-unit subjects. Following the work of Halliday and Hasan, she reasoned that mean pause lengths would be longer for subjects which cohere through the use of a more general term than through use of the same word. General items, Halliday and Hasan argue, should require more planning time because the writer must search for an appropriate superordinate. Interestingly, however, Matsuhashi found that general items did "not require longer planning pauses but in fact [they] were produced so quickly that they seemed almost automatic" (p. 362). This data, plus Matsuhashi's insights into anomalously long pauses before verbs and nouns, provides evidence that short-term memory places limits on the forward motion of the writing process, and begins to suggest ways writers cope with these limitations. The superordinates suggested by Halliday and Hasan are expected to be precise; perhaps the superordinates used here were of a different nature, a question Matsuhashi might explore. The new theory would suggest the superordinates may simply be common words acting as place holders employed to overcome limits of short-term memory. Precise superordinates, the theory would suggest, may more frequently be added after an initial graphic display is produced.

While Matsuhashi's study was awesome in its amount of data generated and the intricacy of research analysis, one must keep in mind certain cautions when

interpreting her results. Most importantly, one should remember that only Matsuhashi's first gross analysis included pauses resulting in both forward and backward change in the graphic print display. Following this gross analysis, Matsuhashi elected to examine only those pauses resulting in the forward linearity of the text. Her results, then, from the point of view of the new theory, do not capture the true transactive nature of the writing process.

Beach: Self-Evaluation Strategies of Extensive Revisers and Nonrevisers

While Beach's study (1976) is older than others discussed here, it offers certain unique support for the new theory developed in Chapter III. Beach asked 26 preservice English teachers on two short paper assignments to write an initial draft in the freewriting mode, to tape their comments about this draft, and to repeat this process as many times as needed until they were satisfied with their finished product. The students were also told to allow a two-day break between each draft. Based on an evaluation of their drafts, the students were divided into two groups, those who were extensive revisers and those who were nonrevisers. Beach found interesting differences between the two groups. The behaviors exhibited by the extensive revisers support the new theory well.

Students in the extensive reviser group conceived of revising as a process involving the making of major alterations in drafts. Nonrevisers, on the other hand, conceived of revising as making minor alterations in form. Nonrevisers were concerned from the very outset with how readers might respond to their texts. Extensive revisers, however, tended to delay consideration of readers to later drafts, and were thus more willing to experiment in early drafts. Extensive revisers, who seemed to possess a less narrow view of revising, grasped their drafts in more holistic terms and were able to see major patterns of development from draft to draft. Nonrevisers, having a much narrower focus, would only comment about each line or problem. Additionally, because extensive revisers had a more holistic sense of their drafts, they could predict changes needed in subsequent drafts. After completing each draft, extensive revisers would confirm whether they had followed through with their predictions and how successful they had been.

From the perspective of the new theory, it would seem that those students who were extensive revisers recognized the double focus of what it means to communicate. They first attempted to discover and get the intended meanings right for themselves in early drafts and to consider readers in later drafts. Additionally, in conceiving each draft more holistically, extensive revisers seemed to be guided by their prediction of overriding schematas, and would then evaluate successive drafts to confirm or disconfirm whether prior predictions had worked out successfully or not.

Beach believed that extensive revisers' ability to perceive their drafts in more holistic terms helped them develop an ability to detach themselves from set approaches to writing. "Nonrevisers were less self-critical because they could not step outside their own egocentric perspective and consider alternative approaches. They therefore became bogged down with problems of their moods, role-definitions, and attitudes" (p. 163). Here the new theory would offer alternate explanations.

The theory would agree that nonrevisers may be less able to conceive of each draft holistically, and thus not be able to make global predictions that would guide subsequent changes. However, rather than being egocentric, Beach's data itself seems to offer a different explanation. He reported that nonrevisers seemed to be concerned about readers from the very beginning, and that this concern made them wary of trying any extensive changes even in early drafts. Thus, the nonrevisers might not have been egocentric, but because of their perhaps unduly early concern with readers, might have been unwilling to experiment with alternate approaches. A second explanation for the nonrevisers' inability to shift perspectives might be a lack of world knowledge that would allow them to view the situation in mind from more than one perspective.

Finally, Beach's results, like the new theory, remind us that many variables within the context of situation affect students' writing process. Beach found especially among nonrevisers, a sense that their time and effort were limited. These self-constraints added to the situational context and entered into the whole of how these nonrevisers' writing process operated.

Sommers: Revision in the Composing Process:
A Case Study of College Freshmen and Experienced Adult Writers

More recent than the study by Beach is one by Sommers (1978) in which she analyzed and compared the revision processes of eight freshmen student writers and seven professional adult writers. The student writers were enrolled in freshman composition and had SAT scores between 450 and 580; the professional adult writers had volunteered after seeing notices asking for persons earning a portion of their income from writing. All were asked to write three themes: one expressive, a second explanatory, and a third persuasive. Each essay was completed over three, one-hour sittings which allowed Sommers to observe how the writers divided their time between planning, drafting, and revising. After finishing each theme, the subjects were interviewed. A fourth task was the revision of a poorly written, one-paragraph composition supplied by the researcher.

Sommers found that the revision processes of the eight student writers were similar, as were those of the experienced adult writers. However, while this was the case within each group, when the two groups were compared, their revision processes were markedly different.

Most significantly, Sommers found that writers' revision processes could not be studied separately from their entire production process. This phenomenon became most clear when writers' uses of time were compared. The professional writers spent the first one-hour session developing a rough set of ideas/notes and completing a first draft; they spent subsequent sessions working out second and final drafts. In contrast, the student writers spent the whole first session developing detailed outlines or detailed first paragraphs of their themes, feeling it necessary to work out their ideas before beginning to write. This view was in contrast to the professional writers who worked out a few ideas before starting to write and used the process of writing itself to discover other ideas. The student writers then used the second session to complete a first draft and the third session to make revisions.

Sommers viewed contrasts between the methods of the two groups as differences in primary concerns for revision. The student writers felt vocabulary or lexical cues were most important. They focused on avoiding lexical and syntactic repetition, frequently consulting thesauri to suggest wording that would make their writing appear more sophisticated. During revision the professional writers also paid attention to lexical cues, but viewed them most frequently as signals to semantic problems that would require rethinking, reworking of the text, etc. Sommers stated:

> The experienced writers view their writing from a holistic perspective and abstract and predict what kinds of revisions need to be made. Details are added; dropped, reordered, or substituted according to their sense of what the essay needs for emphasis and proportion. This sense, however, is constantly in flux as ideas are developed and transformed. As their ideas change, the act of revision for these writers is an attempt to make their writing consonant with that changing vision. (p. 140)[1]

Likewise, the new theory suggests that writers begin with overall predictions or schematas. As Sommers found, these may be in the form of casual lists that represent adult uses of negotiating. Such predictions are worked out as writers proceed; function and form work together transactively.

Sommers found additional ways in which the personal theories of revision held by student writers and experienced adult writers were different. The student writers spoke of writing in terms of "inspiration." When their writing had gone well they were "inspired" and felt what they wrote needed little revision. The students seemed to have little real grasp of potentially effective writing strategies. Instead they had "developed methods to avoid revision by not taking risks, not writing about difficult or unfamiliar subjects, and by using a safe and secure composing method" (p. 151).

In contrast the "experienced writers saw revision as the essence of writing" (p. 142). Sommers views the experienced writers as able to tolerate what she calls "greater dissonance." This concept is similar to that of missed transactions in the new theory. She states:

> The evidence from this study clearly indicates that to the experienced writers revision is not a stage, but rather a process that occurs throughout the writing of their work. . . . Since writers are limited by what they can attend to during each cycle, revision strategies help balance competing demands on attention. Thus, writers can concentrate on more than one objective at a time by developing strategies to suspend their range of revision concerns. (p. 158-159)[1]

Likewise the new theory suggests missed transactions are a natural part of the writing process at all levels of proficiency. Missed transactions must occur if a focus on meaning (including some risk taking) is to be maintained. The new theory, however, considers much more fully than does Sommers' the role that

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[1] From "Revision in the Composing Process: A Case Study of College Freshmen and Experienced Adult Writers" by N. I. Sommers, *Dissertation Abstracts International*, 1979, 39, 5374A. Reprinted by permission.

reading plays in writers' subsequent elimination of missed transactions, i.e., dissonance.

In probing subjects' views of the reader/writer relationship, Sommers discovered that student writers envisioned "a reader as an interrogator who will cite them for violations of the rules for revising rather than responding to their ideas" (p. 148). This view of potential readers offers an explanation, at least in part, for student writers' limited view of revision. The professional adult writers, on the other hand, had developed clear notions as to the expectations of potential readers. In fact, Sommers states, "The idea of a reader's judgment causes dissonance and forces the adults to make revisions on all levels" (p. 139). The adult writers listed time and distance as necessary conditions for revision; these factors helped them become more objective readers of their own texts. The adult writers also seemed cognizant of a differentiation between "writing" and "communicating." "Writing" or figuring out one's ideas was the objective of initial drafts, while the objective of revision was to improve the communicative quality of later drafts for potential readers.

The new theory includes concepts very similar to these findings. The theory does not discuss revision as a separate part of the writing process. It holds that, in writing, communication is first to oneself and then to others. It suggests that writers move from a sense of the whole to a working out of smaller parts, and that a change in one of the six language systems may necessitate changes in others. This process continues until writers have reached appropriate criterion levels, which the new theory suggests relate to writers' notions of textuality, the cooperative principle, and interpretive procedures.

Sommers' quantitative data (see Figure 4.5) further support her numerous insights. One notes that at all levels and across all operations, the student writers simply engaged in less revising. Also, as units of revision increased, the more dramatic were the percentage differences between the two groups. It is important to note that the student writers did use all the revision strategies of experienced adult writers: differences were in the frequency of their use. Additionally, unlike other researchers, Sommers found writers' revision strategies were consistent across mode.

In all, Sommers' study provides much support for the new theory when one examines the responses of the professional adult writers. It does not, however, substantiate the revision theory of the student writers. One may hypothesize that the student writers had learned the product theory of writing. The new theory need not explain their behavior; the role of theory is to describe "good" behavior. The debatable point then becomes one's standards for choosing "good" writers. This study accepts Sommers' method and means of identifying "good" writers. It is then significant that among such writers their processes so frequently shared common qualities and that these qualities are similar to the theory proposed here.

In summary, while Sommers' work began as a study of revision, she found that, for good writers at least, it could not be separated from the whole of their writing process. Her study thus provides much support for viewing writing (as does the new theory) as a process of transactions.

Level	Operation									
	Deletion		Substitution		Addition		Reordering		Total	
	S.W.*	E.W.*	S.W.	E.W.	S.W.	E.W.	S.W.	E.W.	S.W.	E.W.
Word	48	60	65	66	13	77	1	29	127	232
Phrase	38	96	59	122	10	136	3	36	110	490
Sentence	44	358	16	184	14	435	2	96	76	1073
Thema	13	122	x	x	3	118	4	59	20	299
Total	143	636	140	372	40	766	10	220	333	2094

S.W. = 8 student writers
E.W. = 7 experienced professional writers

Figure 4.5. Frequency of revision: student writers and experienced writers. (Developed from *Revision in the Composing Process: A Case Study of College Freshmen and Experienced Adult Writers*, pp. 149-150, by Nancy Irma Sommers. Copyright 1978 by Nancy Irma Sommers. Used by permission.)

Weaknesses of the New Theory

Engaging in a process of theory critique enables a researcher to discover weaknesses not always apparent in initial drafts. The process also suggests solutions to some of these weaknesses. For example, in the original draft of the new theory, "ideas during the writing process" was developed, but problems resulted during attempts to define this term. In doing further reading and thinking about the precise nature of the concept, "transaction" proved to be a far more appropriate term and the concept was greatly expanded in subsequent drafts of the theory.

Thanks to the process of theory critique, many problems of the original draft have been solved. Others remain and are unsolved for the present. In the next section, several studies are proposed that might add new insights into seven of these areas.

1. Further clarification of when and how the impetus to write occurs.

Some theorists may criticize the new theory for its negligible handling of invention and prewriting; the theory uses neither term. A frequent problem of writers, according to many educators, is that they have nothing to write. Innumerable books have been written suggesting activities and topics for student writing. That students fail to have anything to write about a topic is seen as a problem of invention. This conclusion is questionable; the writing problem may be a problem of invention, or may be due to the fact that many tasks/topics have no link to writers' backgrounds nor to their functional purposes. The factor to be explained here is not invention per se, but a better understanding of the conditions under which the impetus to write occurs.

The theory spends little time on anything that might be termed "prewriting." There is a need to clarify the nature of the planning that is necessary for writing to begin.

2. Better articulation of the concept of negotiability and its relationship to egocentrism.

The concept of egocentrism permeates the thinking of many writing educators and researchers, yet is not part of the new theory. Data by Baghban (1979), Hill (1980), and Harste, Burke, and Woodward (1982) suggest that even very young children are aware of readers, and the basic function of writing to communicate. What needs to be considered are (a) the whole context of situation in which writing takes place and (b) children's desire to control conventions.

3. Better explanation of how texts produced by writers function in their own views at various points in the writing process.

4. Better description of how writers' interactions with readers, other writers, and print materials lead to writing development.

5. Better explanation of how and under what conditions transactions, which occur first as a result of overt interactions with adults and/or peers or through observations, are internalized to become covert choices writers make at the point of utterance.

6. Explication of the appropriate relationship between grammar, punctuation, and functional writing.

While one of the primary purposes of the new theory is to suggest that much is basic to the writing process beyond grammar and punctuation, the theory does not explain well how these areas are developed within the total experience of the writing process rather than through isolated drill.

7. Major changes in the theory should research prove that assumptions made in relation to primitive terms are incorrect, i.e., formulation of schema theory as is presented in these pages.

New Studies Suggested by the Theory

Below, several studies are proposed whose results would add to (or refute) the descriptive power of the new theory. Each study is ethnographic in nature. Many would shed light on present areas of weakness within the theory.

1. Ethnographic studies of the impetus to write. Particularly of interest may be studies of children's and adults' decisions to write outside of academic contexts. Also of interest would be conditions, activities, and thinking leading up to writers' decisions to write, and how formulated ideas are when the writers begin. Though difficult to accomplish, studies of this nature are vital. They would do much to clarify the nature of invention and prewriting.

2. Ethnographic studies that would document how constraints influence the writing process. Presently, researchers are not aware of all the constraints on the writing process, or how they help or hinder it. Some constraints that might be studied are (a) different story starters, the qualities that make some lead to closed texts and others to open ones; (b) space limitations resulting from paper size,

staying within the confines of a drawing, etc.; (c) time limitations, i.e., studied might be differences in the writing development of three groups of writers: those who write each day at a time of their own choosing, those who write each day but at a prescribed time, and those who write sporadically during the week at a time decided by the teacher.

3. Ethnographic studies conducted over a period of time examining changes in children's negotiation of meaning through written texts, and within the total context of situation. Such a view might shed further light on the question of egocentrism: are young children egocentric or not yet sure how to negotiate what they mean through only a written text?

4. Closely related to children's negotiation of meaning through written texts, a study of the nature of writers' interactions with peers and adults, and their effect on writing development. Studies outside of school settings would be helpful. The nature of the interactions that occur, particularly those leading to growth, would shed further light on appropriate teacher roles in writing classrooms.

5. An ethnographic study of written "products" from writers' perspectives, rather than from the application of outside standards. Each draft produced by a writer is a product; in fact, each word is a product once it is written. Researchers' and teachers' tendencies have been to apply outside standards to each of these products and to critique them from that perspective. We know little about how these "products" function from writers' own perspectives, or how we might respond appropriately, keeping in mind writers' purposes. For example, Graves has noted that young writers sometimes abandon conventions when attempting something new in their work. Yet our tendency is to apply an outside standard, assuming that writers do not know or have forgotten such conventions. Writers may very well know such conventions are necessary, but for the purpose of a draft—to capture something else and to keep up with the mind's limited processing capacity—have left them out.

6. Further studies of writing as a process of transactions. It would seem that the work and methodology of Flower and Hayes might be viewed from this perspective. The kinds of transactions writers employ can probably be discovered and categorized, having the potential to become strategy lessons that might be demonstrated to writers within meaningful contexts.

7. Ethnographic studies designed to discover whether the brain's limited processing capacity affects the writing process and how writers deal with this problem.

8. Ethnographic studies of the role reading one's own text plays in the writing process. In particular, from writers' perspectives, the function that reading plays at various points in the process needs careful examination. Not being able to read one's own text may be very liberating for basic writers who go back each time to read for spelling, punctuation, etc. Yet such reading may be very helpful to accomplished writers, particularly if their ideas are not totally developed to start with. They may read their texts to re-enter or further transform the meaning

system under creation, then return at a later time to attend to grammar and punctuation.

9. Ethnographic studies of the development of grammar, punctuation, and style when these are not taught directly but occur as an outgrowth of writing for meaningful purposes.

10. Longitudinal studies of children's writing development. Until we have a better understanding of children's writing development, decisions as to when, how, or if to intervene in that process can be made only intuitively, and with some risk.

Chapter V

A Transactional View of Writing Instruction

Ten Tenets

The theory of writing proposed by this study provides educators with a means of examining current practices in writing instruction. Many teachers have already discovered sound methods for teaching writing. What the theory does provide, however, are reasons why certain practices are more valid than others. In keeping with this line of reasoning, ten tenets derived from the theory are listed below. A more complete discussion of the instructional implications for each then follows.

1. Transactions during the writing process are privileged when they relate closely to writers' personal knowledge and experiences.
2. Since writing is a process of transactions, meanings become clear to writers as they advance through the process.
3. Reading plays an important role in the writing process.
4. Missed transactions can occur at all levels of writing development, and should be regarded as evidence of processing.
5. Hypothesis testing and experimentation are vital parts of the writing process.
6. Transactions during the writing process decay and become unrecoverable because they are neutral, optional, or accidental with respect to world knowledge.
7. Writers' understanding of the reader/writer relationship is important to the communication of meaning.
8. Writing develops from whole to part, not part to whole.
9. Control of written conventions is a gradually acquired process.
10. Developmentally, writing is a transactional process of progressive refinement.

1. Transactions during the writing process are privileged when they relate closely to writers' personal knowledge and experiences. In designing writing assignments, teachers should keep in mind students' personal backgrounds and experiences. Topics about which students have little knowledge or interest

should not be imposed. Carried further, the tenet suggests the most advisable strategy is for teachers to let students develop their own topics for writing. These topics will, quite naturally, relate to students' interests, present background knowledge, and desire to explore ideas.

A basic assumption of the new theory is that students are not void of background experiences. Instead, all children are viewed as having experiences about which they can write. When children do not, the theory suggests the problem is not one of emptiness but of having no ideas appropriate for school, or no time to really consider possible topics. In both cases, what is needed is not a change in children, but a change in social constraints of the school setting.

2. Since writing is a process of transactions, meanings become clear to writers as they advance through the process. Teachers should not demand that students have all their ideas worked out before beginning to write, nor stick to a predetermined plan once the writing process is underway. Instead, writers must become aware of the cybernetic quality of text, and use this quality to their advantage in generating ideas. Predictions are developed during the planning of one's writing, worked out further at the point of utterance, and confirmed or disconfirmed by reading one's own text. This becomes a form of feedback. A second form occurs when totally new perceptions come to mind from reading one's own product as it is under production. Therefore, students should be encouraged during the generating phase to become readers of their own texts and to let texts under creation suggest further transactions.

3. Reading plays an important role in the writing process. For a long time teachers have realized the important role that reading plays in revision. They have also been aware of how reading, if one relies on minimal cues, can interfere with proofreading. However, the role that reading plays in the generation of text has not been carefully considered. The theory proposed here suggests that, for proficient writers, reading prior text plays an important role because it constrains the number of choices available. (See tenets two and eight.)

Reading one's prior text can also suggest new transactions to writers who each time come to their graphic displays as different persons because they have engaged in the writing process. Each time writers act as readers, they must construct a meaning for the graphics they have placed on the page. Sometimes in this construction process, they discover new schematas to be added or deleted from the text.

In terms of writing instruction, students need to learn to read their own texts in ways appropriate to various points in the writing process. The reading that occurs is not all *rereading* to correct errors. When such an approach is taken, reading is only a painful process and interferes with meaning generation. During text generation writers should read to make changes that clarify meaning; reading for other purposes can wait until later.

4. Missed transactions can occur at all levels of writing development and should be regarded as evidence of processing. Errorless writing at the point of utterance is not the goal of writing proficiency. Yet many students and adults

would think so. Papers are handed in, corrected, and returned with the hope that students will correct problems in subsequent papers. Implied to students is a sense that missed transactions should be corrected in the first draft of the next paper. The view left in students' minds is that the goal of their first drafts is to produce text free of missed transactions. However, this goal is simply not realistic given the limited processing capacity of the brain. The less familiar writing tasks are for any writer, the more likely missed transactions are to occur. There are simply too many choices to be made at one time for the brain to handle them all at once.

Instead, the new theory implies that students should develop a sense of how the writing process works, and how it can be adapted to meet various functional needs. Missed transactions are to be expected. The proficient writer realizes this, does not worry about it in initial drafts, and goes back later as a reader/reviser to correct such occurrences.

5. Hypothesis testing and experimentation are vital parts of the writing process. Students must be given freedom to "play" with writing. They should be encouraged to try writing about new topics and in new modes. It is only by producing such texts and seeing how they work or could be improved that growth occurs. Such risk taking is not easy and suggests one strong reason not all writing should be graded or even looked at by an outsider.

Instructors must also remember that in experimenting with new forms of expression, students may ignore the use of conventions over which they have previously demonstrated control. It is probably this very sense of control and a need to maintain a focus on meaning that allows writers to drop learned conventions; such conventions can be dealt with later since writers already understand their use.

6. Transactions during the writing process decay and become unrecoverable because they are neutral, optional, or accidental with respect to world knowledge. Using world knowledge, writers must decide the field, tenor, and mode—meaning potential—of their texts. Many choices are possible, and frequently it helps writers to test out possible schematas using alternate communication systems, e.g., speech, notes, or art. Additionally, meaning potential, i.e., register, can be mapped into actual language in alternate ways. Writers must choose what they consider best, but can lose these exact choices even as they put them on paper. Again, notes or alternate communication systems can help writers recall specific transactions.

The problem is, however, that such working out of register and actual language in notes or alternate communication systems is often looked upon in schools as time wasted or procrastination. Or, when children are allowed to engage in these activities, they are expected to stick to their resulting plan and are not encouraged to change it if better transactions come to mind during the actual writing process. Thus, while transactions may be optional, neutral, or accidental to world knowledge, writers overcome these limitations (or advantages, if better transactions result) through use of alternate communication systems, and/or reading of the text which they have already produced.

7. Writers' understanding of the reader/writer relationship is important to the communication of meaning. If writers are unaware of interpretive procedures and facets of the cooperative principle that might apply to a particular writing task, their writing may remain confused and fail to communicate. Suggested is the need for writers to become aware of readers' reactions to their texts. Only in this way are both interpretive procedures and the cooperative principle ever internalized.

The use of student editing groups and student-teacher conferences are appropriate ways to achieve these goals. In editing groups, students become aware of the writer/reader relationship, not only in relation to their own work, but also when acting as readers responding to the work of others. This instructional practice has been suggested since the early 1970s. The theory provides strong theoretical grounds for its continued use.

8. Writing develops from whole to part, not part to whole. According to the new theory, writers begin with overall schematas or predictions that are gradually worked out to include more and more local predictions or schemas. This view is in opposition to a building block approach to writing instruction which suggests that students must first learn to write words, then sentences, then paragraphs, and finally longer compositions. This latter view enhances writers' notions that there are infinite choices available in writing, rather than helps them develop a sense of the cybernetic quality of text which restricts the number of choices available.

9. Control of written conventions is a gradually acquired process. Within a given culture, conventions of writing include notions of appropriate punctuation, spelling, forms, interpretive procedures, and the cooperative principle. Control of these conventions does not represent the whole of the writing process. Nor is control needed before children can engage in meaningful writing experiences. Yet, when instruction focuses too heavily on products and not enough on the writing process, control of conventions frequently gets out of proportion. The result is a focus on missed transactions within the product, rather than on emerging control of the process. This is not to say that conventions are not important from a process orientation; rather, that their role must be kept in proper perspective.

10. Developmentally, writing is a transactional process of progressive refinement. To define writing as a transactional process of progressive refinement takes into account all of the previous tenets, and their instructional implications. Additionally, such a definition suggests that growth in writing should be conceived in new ways. Parts of the writing process are at first external and covert, realized in interactions with readers and in exposure to the work of other writers. Gradually, parts of the process are internalized. At all levels persons realize the purpose of writing is communication. Control is gradually gained as to how this may be accomplished using more conventional means. This view is in opposition to one that sees the nonproficient writer as egocentric. The new theory suggests that *egocentrism* is an empty term. Instead, educators need a better understanding of how children move from a view of the whole context of situation as communicating an idea, to realizing the whole of the communication through a written text.

Taken as a whole, the ten tenets represent important principles within the new theory. Explained have been ways classroom environments and instruction might encourage these tenets to develop. The approach is not eclectic; instead, value is placed on the selection of instructional strategies based on a carefully derived theoretical perspective.

Developing the Writing Process: Role of Students and Teachers

This study proposes a single theory to explain the writing process at all levels of development—preschooler through adult. It also proposes that this process develops without direct intervention when persons write for real purposes arising from functional needs within their environment. This is not to say that instruction does not occur. It does, through the feedback writers receive from reading their own texts and from other readers. Important are the quality of feedback and writers' decisions on how to use information they receive. Writers alone, in the end, select the feedback within their understanding which will improve the meaning of their texts. Writing, like reading, is a private process.

In discussions of writing instruction, according to the theory presented here, it does not make sense to separate the roles of students and teachers as they have been in the past. As proficient writers, teachers do not engage in a totally new and different process which must be acquired by children. Such is only the case when writing is made into something it is not—the mastery of conventions as a prerequisite to the discovery and expression of meaning. From the perspective of this old view, the developmental distance between teachers and students, as writers, is great. However, when one views writing as the expansion and refinement of a repertoire of potential transactions, the process is the same for both.

If so, what is left for teachers to do? A great deal. Lunsford (1979) has suggested the apprentice system is most suited to writing instruction. She views writing as an act of doing what cannot be taught simply through lectures, and outlines several assets of the apprentice system. In such settings, teachers must clearly understand the writing process, not only as writers themselves, but also from a metalinguistic view. Teachers engaged in an apprentice system are the master writers and, as such, bring to the setting real reasons to write. This mind-set is transmitted to students. By writing with their students, these teachers demonstrate that even for proficient writers "words seldom, if ever, flow pristine, effortless, from our pens" (p. 40). Students develop a more realistic view of the writing process, its value, and the strategies one can use to perform a writing task most efficiently.

Zarnowski (1980) has recently outlined a similar view of benefits to be found in classrooms where teachers are also writers. In such classrooms, she found, teachers recognized the value of speech and other media to the writing process, and accommodated children's different writing habits. Writing of x length, done in x time, on x day, etc., was not always demanded. These teachers, too, admitted that writing was not always easy, and encouraged students to develop clear,

concise, honest prose. They viewed missed transactions, seen as signs of students' efforts to learn new writing techniques, with little alarm. This is not to say that missed transactions were ignored, "but were dealt with as they occurred, particularly when they interfered with the writer's attempt to communicate" (p. 506). Finally, these teachers recognized that writing can be valued as an artifact. As a result, children were encouraged to add drawings to their writing, bind them as books, etc.

The important point is that the roles of teachers during the writing process are the same as those of students. When such a view of writing instruction is adopted, teachers and students respond to each other as meaning makers. The new theory would suggest eight roles.

1. As writers, both students and teachers must write about subjects, events, and feelings meaningful to them. The theory proposed here assumes that children have experiences and ideas about which they can write. This is not a commonly held belief; teachers frequently bemoan children's complaints that they have nothing to say. Such is an honest response from children, however, who are asked to write about topics in which they have no real interest or background. An outgrowth of this perspective is the large number of writing texts that are collections of writing activities. At best such activities help children learn to make selections of field, tenor, and mode, and experiment with ways to express themselves through language. These same activities, unfortunately, provide children with few helpful strategies once attempts are made to put graphic displays on a page.

While interesting writing may, with luck, develop out of good writing activities, the focus seems backwards. For example, a teacher may have a class raise baby chicks as material for writing. Or, in contrast, a class may raise baby chicks because that in itself is an interesting life experience; writing may grow out of it if children are so inclined. In the first, writing grows out of the teacher's need to instruct. In the second, writing becomes an integral part of an activity and grows—if it does—out of children's functional need to record some facet of this experience. Such a distinction is not simply a minor play on words, or an unnecessary exercise in logic; if writing is to have meaning it must mediate some real relationship between writers and their environment.

Taylor and Vawter (1978) have made this same point in relation to kindergarten readiness activities. They describe the following functional activity out of which some writing grew quite naturally:

> The teacher and children are gathered around the guinea pig cage discussing their new pet. The teacher is explaining the food guinea pigs eat and is showing the children the food they will be feeding their pet. One of the children remembers that the class goldfish died because too much food was put in his bowl. The teacher suggests that the class make a sign to put on the package telling the right amount of food and a chart to put near the cage to be checked on the day he is fed. She discusses the reasons these written records will help. (p. 942)[1]

[1] From "Helping Children Discover the Functions of Written Language" by N. E. Taylor and J. M. Vawter, *Language Arts*, 1978, 55, 941-945. Reprinted by permission.

Taylor and Vawter caution that "encounters with written language can be exciting for children, but only if they serve a function within the child's own framework of interest" (p. 945).

When teachers and students write for real reasons about topics they know something about, a second commonly held notion is also challenged. Many writing educators presently advocate that teachers should take care in designing writing assignments for students. Such assignments should specify facets of the rhetorical situation so that students may consider them and see them not as hidden expectations of instructors. If, however, parameters are carefully delineated, students never learn to delineate topics. Additionally, careful delineation of assignments reinforces conformity; one receives a good grade by meeting exact teacher expectations. However, if students are allowed, or assisted in developing their own topics, divergency and creativity are fostered.

2. As writers, both students and teachers must respect the writer/reader relationship. The writer/reader relationship is defined as a body of assumptions about written language shared by language users within a certain culture. These assumptions guide writers' decisions as to what and how schematas must be made explicit in texts, and also guide readers' constructions of meaning for texts. As writers, teachers and students must abide by the nature of these assumptions (or break them intentionally) if they are to communicate. In this sense, all writers assume a degree of responsibility if they are to express themselves accurately to others.

3. As writers, both students and teachers must understand and respect the nature of textuality. Frequently, teachers are quick to judge texts as final products. In doing so, they fail to consider writers' own senses of cohesion, coherence, intentionality, acceptability, situationality, intertextuality, and informativity relative to text. In particular, teachers need to be careful not to judge students' written products as sole indicators of knowledge of textuality. There may be elements of which students are aware but do not control in their own writing. Those are in students' zones of proximal development and become evident when one observes their writing process and/or holds personal conferences with them.

In addition, when teachers comment on student papers, they must be careful to consider students' views of them as drafts or final copies (their intentionality and acceptability), and the type of feedback students desire. When students are grappling with getting meaning on paper, they may want readers to respond to the semantic base (coherence), and not to other missed transactions within the graphophonic or syntactic systems (cohesion). Writers can make these corrections once they know their meaning is clear and such further effort is worthwhile.

If teachers are quick to offer criticism, they often evaluate writers as lacking reader awareness or a sense of appropriate style. Frequently, however, they fail to consider or are unaware of writers' own senses of the situationality, intertextuality, and informativity in operation. Whether a text communicates an intended

message must be considered in relation to the total context in which it occurs, its relation to other texts written or oral that have occurred (background information that can be assumed from prior texts), and the nature of information writers believe they share with readers.

That problems in these areas exist may be due in part to the fact that many writing assignments serve no real functional purposes that result in authentic reader responses. The teacher acts as a reader who only, at best, projects what might be the response of an intended audience. That students and teachers end up disagreeing seems a natural result.

4. As writers, both teachers and students must become risk takers. The theory posited here proposes that all writers sometimes produce missed transactions; they must, if their focus is to remain on meaning, and if growth is to occur. Yet, many writers are unwilling to risk such missed transactions at the point of utterance. The instantiation of schematas is slowed and lost before they are realized in the graphic display. Just as readers develop tunnel vision if they are unwilling to risk miscues, so writers, it is hypothesized, develop "tunnel" graphic production if they are unwilling to risk missed transactions at the point of utterance.

Yet, adults often confuse writing proficiency with the production of errorless text and impose such expectations on children. Indeed, adults can produce more errorless text than children. They should; they have had years more of practice. But adults' abilities to produce errorless texts on familiar tasks is not a fair comparison to children whose experiences are more limited. A fair comparison, however, is with adults' own attempts to explore and capture in writing new ideas. Then missed transactions occur for adults as easily as for children. Adults forget this, however. Rarely do they challenge themselves as writers in the same way that they challenge students. Yet if adults or children are to expand their repertoire of meaning expressions, they must become risk takers that expect missed transactions to occur.

This is not to say missed transactions should always remain uncorrected—they should not. But correction must be viewed as only one part of the writing process. It is a role made possible through the part that reading plays in the writing process.

Encouraging writers of all ages to be risk takers does not mean that teachers should push writers to do new things. As Hawkins (1976) has stated, "Rather a teacher is one who creates a certain environment or condition which gives students the opportunity to make discoveries which are significant to them" (p. 8). Writers should be allowed to explore and expand their meaning potential as the need arises, not as a teacher demands.

5. As writers, both teachers and students must grasp the appropriate role of conventions within the whole of the writing process. The appropriate role of conventions is closely tied to risk taking and hypothesis testing on the one hand, and the writer/reader relationship and textuality on the other. Risk taking

and hypothesis testing challenge writers to explore new modes of expression. Yet, the constraints of the writer/reader relationship and textuality place limits on such exploration if writers want their texts to be understood by others. Therefore, writers must develop the ability to handle both phenomena and relate them to each other. Black (1980) in an article, "Those 'Mistakes' Tell Us a Lot," has stated:

> Yet, young school age children are expected to produce perfect writing on the first attempt. As with beginning reading, teachers feel it is their responsibility to eradicate all errors with perfect papers as the goal. Consequently, they return "bleeding" papers to young students with red marks correcting spelling, punctuation, grammar, and vocabulary. Children begin to perceive writing, like reading, as something that must be done correctly. The idea of writing as an aspect of communication becomes lost. And, children's confidence in their writing ability as well as their attitudes toward writing are diminished. (p. 611)[1]

She believes "mistakes" should be viewed as evidence of processing in writing, as they recently have been in oral language and reading. Teachers must learn to accept that competency in writing, like other language forms, takes time to develop, and that latitude for mistakes must be allowed. Most crucial for teachers is to develop a sound notion of how the writing process develops, so that writers' "mistakes" can be better understood for their evidences of processing.

The work of Graves et al. suggests that when writers are exploring new means of expression, they do not always maintain all conventions. Some are dropped in order to investigate the new. There are simply limits to the mind's processing capacity that can be overcome in this way. Control of conventions is not something that exists or does not exist; much depends on the whole context of situation and what writers want to express.

6. As writers, both teachers and students must value the use of alternate communication systems to explore and negotiate meaning of text. Educators have realized for a long time the value of talk in prewriting activities and in the revision process. Less frequently have they recognized the importance of informal diagrams, pictures, and various notes, short of formal outlines. The value of such notes is to get the writing process started, to suggest possibilities, and to eliminate others. Writers should not feel bound to these plans if, during the process of writing, other choices seem better. Artwork and play are also frequently vital to the production of text. Tentative ideas are first formed in these media with which children are more facile, and then are attempted in written form.

7. As writers, both teachers and students must also be readers of texts—their own, other class members', and professional writers'. Reading allows persons to evaluate their own productions, those of peers and friends, and those of professional writers. When persons function as readers of others' work in real life, the evaluations they make are usually not like those of most teachers reading

[1] From "Those 'Mistakes' Tell Us a Lot" by J. Black, *Language Arts*, 1980, 57, 508-513. Reprinted by permission.

students' texts. Readers assume writers have messages they want to convey, and they read attempting to grasp these messages. In contrast, many teachers read student writing looking for ways in which messages fail. Frequently, no sincere attempt is made to get inside writers' intended meanings. An example may help to make this point more clear.

In relation to oral language, language researchers find evidence of tracking between adults and children. Children's language may not be well-formed by adult standards, yet adults attempt to understand the meaning, and usually do. Frequently then, adults restate children's messages in conventional form. Two principles here are particularly important: (a) Adults are not imposing messages on children; adults, instead, enter into children's meaning systems, make sense of them, and simply offer more conventional expressions for the same messages. (b) Adults do not have unrealistic expectations that children will immediately mimic adult form. In oral speech, adults are more willing to accept that children will internalize what they can, and will grasp other features at some later point in time. Therefore, all adults are willing to let children talk like children, but not to let them write like children. Adults want correct spelling and sentence form from the beginning. Extending the notion of tracking to writing would enhance our understanding of writers' roles as readers and evaluators. Knowing better how these roles operate in real life would help educators evaluate student writing more appropriately.

The use of small editing groups is becoming more and more popular in writing classrooms. From the perspective of the new theory created here, such groups are advisable. A clear sense of the purposes for such groups is necessary, however. On the one hand, they provide a constructive environment for students to test out ideas in alternate communication systems. They also help students become more aware of the reader/writer relationship, and other conventions of writing. One must keep in mind, however, that a constant focus on getting writers to begin internalizing some of these behaviors is necessary. Writers must become more discriminate readers and revisers of their own texts. Finally, we must encourage students to be readers of professional writers.

8. For both teachers and students, writing must become a sustained private activity for growth and development to occur. If persons are to become writers, then writing must become an integral part of life. For too many persons, both children and adults, writing is an activity engaged in only when absolutely necessary. It is not something that one does as a normal part of daily activities—notes to friends, records of events, summaries of business conversations, club minutes, etc.

For students to develop a functional view of writing, it must be something that is done frequently and regularly in the classroom. When such occurs, students are quite naturally exposed to all the varying functions of written language. As a result, they learn flexibility in adapting writing strategies to various tasks.

Writing as a private, sustained classroom activity is important for two other reasons as well. If writing is done infrequently and always for a grade, then

students rarely discover the reinforcing qualities within the process itself. Likewise, they rarely have the opportunity to develop self-correction strategies if themes must be finished within a 24-hour period and are turned in, graded, and handed back. Even if at this point students are asked to make corrections, it is usually merely a matter of correcting missed transactions the teacher has identified. It does not necessarily follow that students develop self-correcting strategies from this practice.

In essence, the new theory requires that teachers enter into their own classrooms as writers—not just lecturers and evaluators of the process. Suggested is that teachers can best help students become proficient writers by modeling the process themselves. This demands, however, that teachers become introspective about their own writing process and personal attitudes toward writing. Making these changes can be very threatening for teachers; like students they will have to become risk takers. In sharing their own writing, they will need to reveal their real selves and to accept criticism. If they want students to improve, they will have to model a willingness to sincerely work on improving their own writing. The new theory also implies that teachers should take an active instructional role during students' writing process, rather than simply waiting to evaluate products and then give needed instruction.

Writing Programs

Instructional programs exemplifying the theory of writing proposed by this study need to adhere to the ten tenets and the teacher-student role characteristics previously outlined. Such programs are indeed possible and practical; there already are some in existence. Logically, educators like to develop sound instructional practice from research findings. However, reality is rarely so neat. Traditionally, educational research has involved comparisons of treatment groups; that treatment resulting in the greatest statistically significant improvement is thought best. However, the statistical significance of a program does not necessarily make it good. From a constructivist view, a good instructional program develops from increasing understandings of basic learning processes.

From an ethnographic, constructivist view, one would anticipate that teachers sensitive to students' learning processes, and introspective about their own, would have discovered sound instructional practices without the aid of a well-articulated theory. Therefore, theory does not usually offer totally new ideas for instructional programs. On the other hand, theory building is important to instructional practice for two reasons: (a) While theorizing offers support to some programs already in existence, it offers a set of criteria for clearly eliminating others. (b) Theorizing can lead to further development and refinement of programs that already generally exemplify important principles. Below are discussed a number of programs already in existence that the new theory would support. The theory provides these programs with further justification by demonstrating that they do not violate but, in fact, support and enhance the natural writing process.

Macrorie: Telling Writing

The first edition of Macrorie's book was written in 1970; the second, in 1976. What Macrorie offers is an instructional approach to college freshman composition that can be adopted in public school classrooms. The new theory of writing developed in Chapter III articulates the basic concepts that lie behind Macrorie's approach. Important concepts in Macrorie's program supported by the new theory are (a) truth-telling, (b) the importance of free writing/journals to the writing process, (c) the use of editing sessions, (d) the belief that the form of a text follows from its function, and (e) the nature of the writing strategies he suggests.

Elbow: Writing Without Teachers

Elbow's instructional program published in 1973 has many characteristics similar to Macrorie's. In Macrorie's program, the teacher plays a very definite leadership role in guiding editing of student drafts, and in introducing specific strategies used by writers. While the teacher sometimes brings in a piece of his/her own work to be critiqued, emphasis is not placed upon the teacher completing each assignment with students.

Like Macrorie, Elbow believes in the use of free-writing and editing groups. His view of the teacher's role, however, is different. In contrast to Macrorie, Elbow advocates a teacherless writing class. His original aim was to write a book that might help those not in school, particularly adults, become better writers. Such persons working outside the bounds of academia would not have nor, to Elbow's way of thinking, need a teacher; they would teach each other. The book explains how such a group might operate. Elbow believes his ideas may also be useful for teachers and students. Classrooms where his model is used become "teacherless" in that the teacher as well as the students follow the very same procedures. The teacher writes each week and acts only as an equal, not an authority, within the group.

A second quality of the teacherless writing class is that no writing topics are assigned. Pieces of writing develop from persons' own concerns and are not dictated. Most strongly pointed out by Elbow's program, as reflected by the new theory, are that (a) writing is learned and not taught, and (b) the process of writing is the same regardless of age; efficiency and adaptation to a wider variety of functions are what increase.

Hawkins: Group Inquiry Techniques for Teaching Writing

Crediting Elbow as a seminal influence on his ideas, Hawkins has published a text (1976) on application of group inquiry techniques to teaching freshman composition. On defining the teacher's role, he states, "a teacher is one who creates a certain environment or condition which gives students the opportunity to make discoveries which are significant to them" (p. 8). Thus, in his definition of the teacher's role, Hawkins is closely akin to Elbow while at the same time giving more direction as to how such an environment can be created. Unique to Hawkins' book is his ability to place writing and group inquiry techniques into a larger framework of learning theory.

Lacque and Sherwood: A Laboratory Approach to Writing

A text, published in 1977 by Lacque and Sherwood, suggests still another variation on instructional practice that would follow from the new theory. In differentiating their approach from those of Macrorie and Elbow, these authors state,

> Freshman composition students coping with Elbow's messy truth or Macrorie's freedom often feel the need for some direction and order. The laboratory methods of small groups and interviews can provide freedom in a structured situation. Students are allowed freedom to make choices, yet they have the option to get as much direction as they want and need. (p. 28)[1]

Drawing upon their own experiences while teaching composition, Lacque and Sherwood believe in and provide more explicit guidance for composition teachers than do Macrorie or Elbow.

NCTE Committee on Classroom Practices: How to Handle the Paper Load

As indicated in the preface, the 1979 NCTE publication edited by Gene Stanford reflects a major shift from a product-oriented theory of writing instruction, to a process-oriented one. Product theories are said to be part of the assign-assess myth which assumes the best way to develop student writing is to assign themes, and carefully assess students' performance. Instead, authors of articles in this publication "have discovered that by questioning various components of this myth they can foster growth in composition even more successfully than through the 'assign-assess' approach and at the same time save themselves from an avalanche of papers to grade" (p. xiii).

Thus, in an attempt to increase the amount of student writing, yet at the same time keep up with larger classes, teachers have begun to adopt new methods whose results challenge the assign-assess approach. They have found that not all student writing has to be graded, or even read, to increase skill development. The new theory would predict such a result: ungraded writing encourages risk taking, and the process itself provides students with feedback.

Teachers have also found that not all missed transactions have to be marked on students' papers for writing to improve. In fact, focusing on a limited number of missed transactions within students' abilities to handle is more effective. Such a view signals, as the new theory suggests, the need to examine written products from the learner's perspective rather than that of an outside judge. Finally, many writing teachers have discovered that the teacher does not have to be the sole source of feedback for student writing. Again, as the new theory would suggest, a variety of readers adds to writers' understanding of the reader/writer relationship and notion of textuality.

Sonnenberg: "Things to Do in the 1980s"

In the January 1980 issue of the *English Journal*, Sonnenberg outlines directions for English curriculum design in the eighties. Her outline of ways to approach

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[1] From *A Laboratory Approach to Writing* by C. F. Lacque and P. A. Sherwood. Copyright 1977 by NCTE. Reprinted by permission.

writing instruction in this decade (see Figure 5.1) is very compatible with the new theory and instructional practices outlined in other parts of this chapter.

Sonnenberg's list is most interesting when one considers that many of the methods she suggests may be carried out in content classrooms as well as English classrooms. The new theory intimates that when content teachers have a clear understanding of how the writing process operates and develops, its inclusion in the classroom becomes quite natural; writing becomes a way of working out, clarifying, and sharing one's thinking. It is best learned when it serves a functional purpose. Not all these purposes can be fostered in English classrooms. The exploration of a wider variety of content, audience, and purpose is needed.

WRITING

___ Establish a writing lab environment in your classroom. Provide tape recorders, a typewriter or two, and opportunities to share and discuss writing.
___ Provide time frequently for free writing or journal keeping. Do not evaluate this writing or insist that it be shared unless, of course, the writer wants to share it. You may wish to provide stimuli for students who need them. (Sonnenberg)
___ Promote the idea of writing for a reader other than the teacher. Then provide other readers!
___ Teach students how to read and evaluate their peers' writing samples--and, ultimately, their own. (Sonnenberg)
___ Teach proofreading skills and provide frequent opportunities for practice with guidance.
___ Include writing assignments for the "real world"--e.g., letters to the editor, editorials or points of view for local TV or radio stations, letters of praise or complaint, articles to submit for publication, photo-essays, brochures, posters, signs, pamphlets, interviews, or sales pitches for clubs or drives. (Judy)
___ Read about and explore sentence-combining activities. You may want to conduct some research of your own. (Strong, O'Hare)
___ Experiment with poetry writing. Investigate the possibility of a Poets-in-the-Schools program. (Dunning, Koch, Silverstein)
___ Teach grammar, usage, and mechanics in a writing context--not in isolated drills and exercises.
___ Encourage students to try many different styles of writing. Parody is one way of introducing a variety of styles. Help students develop their own styles.
___ Do many or most of your writing assignments yourself to help understand the writing process.
___ Discuss process/product with students. Help them analyze their own writing in terms of strengths and weaknesses and to set goals for improvement.
___ Arrange for personal conferences with students to discuss their writing from time to time or tape record your comments on individual cassettes. Both techniques help eliminate the red pencil syndrome.
___ Help students create classroom publications and bulletin board displays of their work.

Figure 5.1. Things to do in the 1980s when teaching writing. (From "Things to do in the 1980s and the \-ahhh! Effect" by Lois J. Sonnenberg, *English Journal*, 1980, *69*, 34-37. Copyright 1980 by National Council of Teachers of English. Reprinted by permission.)

Involving Teachers at All Levels in Writing Instruction

One of the ultimate instructional implications of the new theory is that all teachers should encourage students' writing development. English teachers cannot do the job alone. One can find exemplary programs at the secondary and college levels where a wider variety of teachers are becoming involved in writing development.

At Beaver College, instructors are encouraged to view writing as an integral part of the learning process:

> At the beginning of a lecture students may be asked to reflect in writing on some aspect of their reading for that day. In the middle of a seminar discussion, an instructor might stop to allow students to jot down some ideas in answer to a difficult question. At the end of a lecture, an instructor might give the students five minutes to write a summary of the key points. Even in a lecture hall of 500 students, this technique can be used and one or two students can be asked to read back what they have written. . . . by writing so frequently and for so many different purposes, Beaver College students are developing the habit of writing things down—an important habit for a liberally educated person. (Maimon, 1979, p. 9)[1]

At the high school level Delmar (1978) suggests that English department faculty urge administrators to develop a "Committee on Composition," composed of the English department chairperson or representatives, and the chairs of the other major departments or their representatives. Committee members would develop sample writing tasks for various content areas, and help to develop evaluation criteria. The committee member from each discipline would try to involve others in his/her department on a voluntary basis. Delmar outlines several good ways to get writing started in content classrooms.

At the elementary level, the problem is not one of involving a wider variety of teachers but of teachers encouraging children to write for a wider variety of purposes and readers. Subsumed by this need is one to keep punctuation, spelling, repetitions and omissions, and capitalization in proper perspective. Along these lines Yatvin (1979) has recently reported results from a two-year study of a meaning-centered writing program for fourth- and fifth-graders. Eliminated from the program were all writing books and workbooks; spelling books, lists, rules, and grammar lessons; lessons on punctuation and usage, unless directly related to the task at hand; and formal grading. When comparing the meaning-centered program to a control group, Yatvin found that students in both groups made statistically significant progress in the skill areas of punctuation, spelling, capitalization, and repetitions and omissions. Thus, though not directly taught, children in the meaning-centered program made progress similar to that of students in the more traditional program. Pre- and post-test essays were also scored. Yatvin reports that for both groups, scores of the greatest number of students did not change over the 9-month period. She does not construe this lack of change to mean that students' writing showed no improvement but that the evaluation criteria were not sensitive enough to document such change.

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[1] From "Writing in the Total Curriculum at Beaver College" by E. P. Maimon, *CEA Forum*, 1979, *10*, 7-10. Reprinted by permission.

In summary, while the outlines of the programs are brief, it is hoped that readers can begin to develop for themselves the relationship of each to the new theory. The purpose of the short descriptions is to say only enough about each program to interest readers in further exploration.

Writing Strategy Lessons

Writing programs like those outlined above offer students multiple opportunities to develop effective writing strategies. To highlight certain strategies used by proficient writers, teachers may want to develop specific lessons. Such lessons should add to students' repertoire of effective strategies, or help to modify some ineffective strategies they are using.

Strategy lessons are developed from careful observation of a student's writing process. Cues for needed strategies should come from the learner; they should not be imposed. Therefore, it is more likely that a strategy lesson will be developed for a specific student or small group of students than for a whole class. Teaching such lessons is quite workable in classrooms where learning centers are used, and/or in a lab approach to writing.

Development of strategy lessons demands that teachers possess certain kinds of knowledge. Of greatest importance is a solid understanding of the writing process. Only those teachers possessing such an understanding will know how to analyze students' missed transactions, and have a solid basis for deciding when to intercede to facilitate writing development. To develop such knowledge, teachers must become writers themselves, learn to introspect, develop a language to talk about what they find, then acquire the analytical ability to apply insights gained to student writing.

Like strategy lessons for the reading process (Goodman & Burke, 1980), strategy lessons for the writing process should include three phases: an initiating phase, an integrating phase, and an extending phase. Some important beliefs underlying the nature and order of these phases should be clarified. A strategy lesson does not begin with a lecture by which the teacher tells the student what is to be learned. Instead, the teacher presents the writer with a task that inductively highlights a need for the strategy being presented, and encourages involvement. Only in following this inductive discovery of the strategy is there discussion of it—the integrating phase. At such a point the student has a real reason to engage in talk about the new strategy being used. After such discussion, there is need for other follow-up activities that encourage the student to extend and adapt use of the strategy to other writing settings.

Also, as in reading strategy lessons, writing strategies should use, or result in, whole samples of discourse that are complete and meaningful as language. While a strategy may highlight one portion of the writing process, other parts of the process should remain intact. Highlighting one portion is frequently accomplished by constraining others, i.e., making them easier, so the learner is left with the processing capacity to focus on the strategy being presented.

The constraining of certain portions of the writing process to highlight others is not the same as developing carefully delineated assignments. Writing strategy lessons should not be considered assignments in the traditional sense. Instead, a strategy lesson involves a separate time and activity apart from the writing process itself, where a writer interacts with a teacher and/or materials, and/or other writers, to learn something about writing. It is a time for external feedback, for making some normally covert part of the writing process overt, so that a student's use of it can be enhanced. Once a strategy lesson is understood, a student is then encouraged to try it in his/her own writing.

Assignments as such take on different qualities within the new theory. Not all writing a student may do is an "assignment," i.e., graded. Only selected pieces (decided by student or teacher) are evaluated. Also, frequently "assignments" are not on the same topic for all students, but reflect individual student interests, backgrounds, and recent functional needs for writing. When "assignments" on the same topic are given, papers still reflect some variety, since each student is encouraged to delineate his/her own point of view from a broadly defined area.

When doing a strategy lesson, it is advisable for a teacher to engage in it just as a student does. This is in keeping with the apprentice system already suggested. At least three reasons for this are immediately apparent. Firstly, by working alongside a student (note, not with the student) on their own version of the strategy, a teacher can help to set the pace. Secondly, the teacher's behavior is a model for the student, available for the student to draw from if needed. Finally, since both have engaged separately in the strategy, there is a basis for meaningful sharing of what was completed. These same reasons are ones why some strategies may work best in small groups, where students can draw similar information from one another.

In the following pages, a group of specific writing strategies are outlined. No attempt has been made to be exhaustive. These strategies are examples of the kind of thinking and learning process that must go into the development of writing strategy lessons. This group is successful if it begins to get teachers to draw new thoughts from their knowledge of the writing process and analysis of particular student's needs, about lessons that they might develop.

Written Conversation-Level I [1]

Writing concepts emphasized:

1. Written language is meant to be meaningful.
2. Written language is encoded in graphic symbols.
3. Wordness and its relation to larger units of language.
4. The need to be sensitive to readers' background knowledge.
5. If the topic of the conversation is focused, it can afford experience writing on non-narrative topics.
6. If the student is given the task of initiating the conversation, it gives him/her repeated opportunities to generate topics and demands more than one-word responses.

[1] This strategy was developed by Hill and Burke, and is used with their permission.

7. Encourages use of prior text to decide what to write next.
8. Encourages risk taking.

Initiating Activity:

1. The teacher tells the student they are going to engage in a conversation, but everything must be said in writing.
2. Either the teacher or the student initiates the first message. The written conversation continues as long as interest is maintained.
3. If the student is unsure how to spell a word or of what word she/he needs, the teacher should just encourage the writer to do his/her best.
4. If the teacher is unsure the writer can read his/her text, she/he may choose to read it to the child. Similarly, if the teacher is unsure what the child's text says, she/he may ask the writer to read it.

Integrating:

Written conversation in this form is a useful strategy with beginning writers. The language concepts emphasized are learned by engaging in the strategy. Much talk about the strategy or concepts themselves is usually inappropriate because writers at this level have no need for such meta-concepts. Two exceptions might be the use of written conversation with somewhat more proficient writers where one might want to talk about the range of topics generated by the written conversation and questions that reflect information needs of the reader.

Extending:

See Written Conversation-Level II.

Written Conversation-Level II [1]

Writing concepts emphasized:

1. Writing may be used to discover/investigate one's own thoughts.
2. The reading of one's own text can lead to further idea clarification and generation.
3. In writing, one can internalize a sense of conversation to anticipate reader needs.

Initiating activity:

1. Students are asked to bring to class three or four questions to which they would like to find answers, but don't as of yet have them. (Francoz's students generated their questions in relation to a reading assignment.)
2. Students are instructed to use one of their questions to begin creation of a dialogue. Succeeding questions should arise from the answer to the prior question.

Integrating:

The teacher and students should share results of their individual efforts. Emphasis should be on how new questions and answers grew out of reading one's

[1] The following is an adaptation of a teaching idea suggested by Francoz (1979) in an article entitled, "The Logic of Question and Answer: Writing as Inquiry."

answers to prior questions. Many times, new questions arise as one anticipates more reader needs from reading one's own text. Finally, the writing that emerges is not totally planned, one thought added to another, but was used to think.

Extending:

Have the students revise their writing generated in this way into a more conventional theme.

Writing Texts for Wordless Picture Books

Language concepts emphasized:

1. Wordless picture books demand a writer produce more than one-word responses. While they demand such responses, they also provide much needed support for producing running text. Art as an alternate communication system suggests to writers a limited context of situation and, in turn, field and tenor.
2. Writing text for wordless picture books also encourages writers to consider text at the discourse level; one must produce a text that has overall cohesiveness. Thus, when children engage in developing text for wordless picture books, they are learning that written language is meant to be meaningful, particularly in units larger than the word.
3. The support provided by the artwork in wordless picture books also encourages students to be risk takers.

This activity may be initiated in three different ways, depending upon the competence of the writer.

Level I: Initiating Activity

1. The child looks through the book and discusses what may be happening in each picture.
2. The child returns to the beginning of the book and tells a story to accompany the pictures. This story is written down by the teacher as the child goes along. Or, the child tapes his/her story which is later transcribed by the teacher.

Level I: Integrating

1. The child reads his/her story making any changes he/she thinks are needed.

At this level, the strategy seems simply to be a form of the language experience approach, which is traditionally associated with beginning reading rather than writing instruction. The point is that a student engaged in this activity is also demonstrating use of many strategies relevant to the writing process.

Level I: Extending

1. See Level II.

Level II: Initiating Activity

1. The child looks through the book and discusses what may be happening in each picture.
2. The teacher and child return to the beginning of the book. They alternate writing text for each page.

3. The teacher does some crossing out, editing of text as she/he goes along. The child is encouraged to do likewise.

Level II: Integrating

1. The teacher and child talk about how writers, often making mistakes, go back and correct later. The important thing is to get ideas on paper first. The teacher encourages the child to be a risk taker.
2. The child and the teacher talk about how reading what the other person writes each time is important. At this level, the child is beginning to generate some of his/her own text. However, he/she is also free to draw upon what the teacher has done for needed assistance.

Level II: Extending

1. This activity can also be carried out by two children instead of a teacher and student.

Level III: Initiating Activity

1. The child looks through the book and discusses what may be happening in each picture.
2. The child then writes a text to accompany the pictures.

Level III: Integrating

1. The teacher and child talk about how written texts are meant to be meaningful with all parts of a story fitting together.

Level III: Extending

1. The strategy could also be used at all levels with comics where the captions have been removed.
2. The strategy can be used with non-narrative, i.e., more content-oriented, wordless picture books as well as narrative ones.

Generating Text [1]

Language concepts emphasized:

1. Writing is a process of selecting relevant elements of field, tenor, and mode.
2. Predictions as to what one wants to write are first made at a global level and then at more focal levels.
3. When the focus in writing is on meaning, function and form operate together.
4. A writer will find reading his/her own text to be helpful in that 1) by doing so he/she can confirm or disconfirm whether intended meaning has been expressed and 2) let text so far generated suggest or constrain upcoming transactions.

Initiating Activity:

1. Using small pieces of paper ask the student to suggest a few topics she/he might write (limit to 2-4). List one topic per slip of paper.

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[1] The following is an adaptation of a strategy lesson developed by Kucer (1980).

2. Ask the student to select one of these.
3. Ask the student what she/he would like to say about this topic. You write or have the student write each phrase on a slip. (Kucer suggests the use of index cards.) Units of language on the slips may vary from a single word to several sentences. This is to be expected and as Kucer suggests at no time should the unit of language placed on the slips be restricted or specified.
4. Have the student set this visual array to the top or side of the desk.
5. Ask the student to begin writing about his/her topic. The student may refer to the visual array of slips as needed. She/he may also rearrange, change, or add to the slips if she/he wants to. This is not insisted upon.

Integrating:

Discuss with the student the relationship between the slips and his/her text. How did the slips help? What is their relationship to the text? After you began to write, what happened and why?

Extending:

Get students to practice developing journal entry ideas using this procedure. Also use the procedure when it is desired for each child to select a portion of a class project to write about.

The strategy may be used with more than one student encouraging verbalization after steps 3 and 4.

Keeping Journals

Language concepts emphasized:

1. Writing is a process of transactions through which a person may explore his/her relationship with the environment.
2. If the writing in journals is not evaluated, teachers can encourage hypothesis testing and risk taking.
3. Engaged in frequently, journal writing helps to emphasize writing as an integral part of learning.
4. Approached in this manner, journal writing emphasizes that topics for writing come from one's background experiences (including reading).
5. Journal entries may be selected for development, and revision into papers to be graded. In this way, journals can be used to help writers understand where attention to conventions and other missed transactions are appropriately placed in the writing process.

Initiating Activity:

1. Frequently allow students to write journal entries.
2. The only grade attached should be one for simply engaging in the activity.
3. Students should be encouraged to generate their own topics; these may be related to activities in class.

Integrating:

Students should be encouraged to reread their previous entries every so often. Let them focus on these entries as products, noting changes in their writing and thinking.

Extending:

See No. 5 under Language concepts above.

Cutting and Pasting

Language concepts emphasized:

1. Facets of the cooperative principle, interpretive procedures, and elements of textuality.
2. The malleability of text.
3. The relationships between function, form, and meaning.
4. Ways to deal with missed transactions at the discourse level.
5. Reading as a means to confirm or disconfirm the meaning of one's text.

Initiating Activity:

1. Have the student complete a draft of a paper, writing on only one side of his/her paper.
2. Cut apart paragraphs of the student's draft.
3. Ask the student to arrange the paragraphs in the most logical order to express his/her meaning.
4. Encourage the student to add needed transitions, omit irrelevant sections, or make additions.
5. The student may also be encouraged to cut paragraphs into smaller units if changes are needed.

Integrating:

The teacher discusses with the student how many of these same changes can be made by drawing arrows, using cross outs, carets. In other words, parts of this process that are now overt may be done more covertly.

Extending:

This process may be repeated by two students rather than by teacher and student.

Chapter VI

A New Look at the Relationships Between Reading and Writing

This study has proposed a new theory of the writing process, critiqued the result, and considered implications for writing instruction. Yet how the new theory may relate to reading has not been discussed. Such is the purpose of this chapter.

A Complementary View of the Reading Process

The diagrams developed in Chapter III to explain the writing process can, with minor adjustments, be used to explain the reading process. The result should not be regarded as a new theory of reading, but simply another way of illustrating the reading process as developed in greater depth by Goodman, de Beaugrande, and Eco (see Chapter II).

Considering first the diagram of the cone-shaped beaker, reading occurs within a context of situation when a reader desires to communicate with a writer through the latter's written text. This desire arises to meet some function meaningful to the reader within a context of situation. Once the motivation to communicate occurs, a reader's world knowledge is activated. This world knowledge includes both content and processes; its exact make-up is greatly influenced by the context of situation. Activated world knowledge guides the making of global and focal predictions as to the nature of the graphic stimuli to be perceived. Global and focal predictions at this point may be thought of as the reader's sense of the meaning potential of the text. As such, these are predictions relative to the field, tenor, and mode of the text which collectively are known as its register. The reader also knows from prior encounters with graphic displays that the mode of the text is negotiable: he/she may anticipate a text as having a certain form and/or containing some pictures or diagrams.

These global and focal predictions are then instantiated into language, known as global and focal mapping, and checked against the incoming visual information. A tentative text-world model is under development in the reader's mind. It must be remembered that a reader does not check every facet of the visual display. Instead he/she perceives only enough features to confirm or disconfirm that the visual information fits with the text-world model being created. While mapping

may lead to either the reader's confirmation or disconfirmation of his/her view of the writer's intended meaning, it may also lead to new perceptions. One should remember that the tentative text-world model is a mutual dependency network. At times a reader's predictions are not wrong, i.e., disconfirmed; they simply do not fit with incoming visual information in their present form. What the reader does then is not so much to disconfirm old perceptions as to reorganize old perceptions in order to create a new text-world model that can handle all the input. Global and focal mapping act to guide perception of the graphic display. Checking such predictions against the graphic display itself results in feedback, leading to confirmations, disconfirmations, or new perceptions of the text-world model under creation.

In reading, rereading serves the same function as revision in the writing process, allowing the reader to work out disconfirmations. Additionally, as in rewriting, rereading allows the reader to focus further on meaning, going back later to grasp more detail if necessary. The reading process results in a reduction of uncertainty as to what the writer meant to communicate. As with revision, rereading is not something that occurs only after reading, but is an integral part of the process that may occur at any time while the text-world model is under creation.

As in writing, the cone-shaped figure is meant to capture the types of possible transactions that may occur simultaneously in reading, but not to specify a temporal dimension. Also, as in writing, the cone-shaped figure may be thought of as a beaker. Any change in the system affects the whole system; all work together. The reader is not outside the system with meaning being transmitted to him/her. Instead, the reader is part of the system and, as such, begins to construct a meaning for a text which in turn is confirmed or disconfirmed by the visual information encountered. As in writing, comprehension in reading is an ongoing process of transactions.

This concept of ongoing transactions is perhaps better displayed by the second figure which illustrates how the reading process works over time. Again one notes that the same diagram developed to illustrate how the writing process unfolds, can be used.

A reader begins with a global schemata or prediction for an entire text. This schemata is quite general; it arises from the context of situation or from an initial glance at the graphic display. This overriding schemata may include several schemas. Not all of the schemas are necessarily realized in the text. Some remain defaults which readers must infer. Each schema in turn may have subschemas. The potential values various subschemas may take on within a particular context are known as "slots."

One may think of a reader at some point (in real time) within his/her reading of a text. The reader's perception of incoming visual information is guided by the text-world model already under creation. The reader does not anticipate encountering just anything. The choices are limited by the pragmatics, syntax of semantics, semantics of syntax, semantics, syntax, and graphophonics already set up. He/she makes global predictions which become more specific focal ones during

reading. These in turn are instantiated through global and focal mapping into language expectations, and are confirmed or disconfirmed by sampling the visual information available. The result for the reader is the creation of a text-world model that may be stored in memory.

The implication of being able to use the same set of diagrams to explain both reading and writing is that both processes are far more alike than previously thought. The cognitive operations involved are the same. It would seem the only real difference between reading and writing is where the text-world model under creation becomes realized. In writing, the text under construction is realized through a graphic display; in reading, in the mind. Generally the text constructed in writing is thought to be more explicit than the text produced in the mind through reading. This is not always true, however. Reading tasks can sometimes demand great explicitness and storing of detail. Likewise writing can, at times, be highly telegraphic with much meaning remaining implicit. Common points of difference on this continuum do not signal basic differences in the cognitive processes, and the language knowledge used in either process. Thought of in this way, reading and writing are simply alternate communication systems. In the next section, likenesses between the two processes will be discussed in more detail.

Relationships Between Reading and Writing

1. **As constructive processes.** Generally, reading has not been viewed as a constructive mental process. Instead, it has been viewed as a process by which readers' jobs are to recode and then to reconstruct a writer's message. Recent theories of reading would suggest, instead, that the real meaning of a text does not reside in the material itself, but in the transactions that take place between readers and text. Especially brought to light has been the importance of readers' background knowledge on their perception and comprehension of text.

In a sense, writing has always been considered a constructive process. However, until recently it was thought that good writers worked out their meaning during the prewriting stage, and during the writing process simply reconstructed it. The new theory suggests that writing, too, is a constructive process through which meaning is established while writers actually engage in the process.

2. **In relation to world knowledge, interpretive procedures, and the making of meaning.** Writers make selections of semantics, syntax, and graphophonics expecting that they and their readers mean similar ideas when certain choices are made. Also assumed is that readers will make inferences appropriate to suggested situations. Writers accept that they must conform to norms if they are to be understood, and generally use accepted formats for unfolding their texts. They can then expect readers to withhold judgments of clarity until certain portions of text have been read. Readers, in comprehending texts, also rely on these same understandings of text construction.

3. **As transactions.** Rosenblatt, in her book *The Reader, the Text, the Poem* (1978), has been interested in what she calls "transactions during reading," in other words, how comprehension develops and changes during the reading

process. Smith (1978) has discussed this same idea in terms of global and focal intentions and predictions. The theory of writing developed here argues that the writing process may also be thought of in terms of global and focal predictions. Readers make predictions about upcoming text from cues within the text and context of situation that act to constrain the possibilities. In writing, the same forms of cues also exist. Global predictions exist largely as a function of the context of situation. Focal predictions are made by writers from text already generated. That which is to be written next, just as that which is to be read and comprehended, does not exist in a myriad of infinite choices. As in reading, prior text constrains what one may write in upcoming text.

4. As cybernetic systems. Cybernetic systems are dynamic, and their dynamic quality can make them self-fulfilling. In reading, the process itself provides its own feedback and reinforcement. Readers make predictions, find their predictions confirmed or disconfirmed, and in that way build in their own feedback, and check on comprehension. The same possibilities for feedback exist in writing. From a cognitive view, feedback in the writing process occurs and is necessary if the process is to continue until the text is complete. Good writers, this theory hypothesizes, focus on meaning and do a great deal of reading, revision, and editing of text. All is part of the process.

5. As developmental processes. A growing body of reading researchers propose that no distinction be made between learning to read and reading. Reading is viewed as a process that begins to develop naturally for children who live in a literate society. Recent research would begin to suggest the same lack of distinction is true of the writing process as well. Challenged is the long-held assumption that writing must be taught.

That educators have thought otherwise for so long reflects the imposition of adult conventions on children's products. When children's attempts at both reading and writing are viewed from their own perspective—trying to get beyond a simplistic view of their control of surface conventions—it is clear that a great deal of knowledge about written language is controlled at very young ages. Control of conventions, which represents only one aspect of either the reading or writing processes, develops only gradually. Development occurs through the feedback children receive from examining their own writing, from feedback they get from others as to the successful transmission of their meaning (tracking), and the gradual internalization of this knowledge.

6. In relation to error. In reading, readers attempt to gain meaning from print. Whether the transactions that occur require little or much attention to graphics is dependent largely on the relevant background knowledge readers already possess that can be used to make global and focal predictions. If readers have little background knowledge, it is difficult for them to perform transactions on several levels at once, and missed transactions will occur. To comprehend a very difficult text may require rereading several times.

Missed transactions in the writing process can be examined using this same line of reasoning. To produce "errorless" writing, writers must make a number of

transactions simultaneously. With some writing tasks, indeed, this is possible because writers have developed the most efficient forms of cue utilization from dealing with the same tasks before. In other instances, such is not the case. Many times, particularly if the task is not a familiar one, writers cannot focus on all these transactions at one time because of the mind's limited processing capacity. As a result, missed transactions occur. In fact, missed transactions are natural to the writing process at all levels of development depending on the difficulty of the task for the individual. It is through reading of their texts that writers correct missed transactions, consider other elements they were unable to focus on before, and in this manner confirm the evolving meaning of their texts.

The ability to correct missed transactions does have certain limitations. Writers can correct texts for missed transactions only to the extent that they are able to anticipate the backgrounds of their readers, the shared understandings of interpretive procedures, and the cooperative principle. Writers' abilities can also be limited by lapses or misunderstandings in their world knowledge and/or knowledge of written conventions. In all these cases, feedback from readers helps writers correct missed transactions. Additionally, exposure to other reading materials/models may make writers aware of missed transactions in their own texts and suggest possible solutions.

A New View of the Basics

The above likenesses between the reading and writing processes shed fresh light on "the basics." The theory of writing proposed by this study offers new criteria for what is fundamental and essential to the writing process and its development. These same fundamentals are also true of reading. Principles or basics of both processes are outlined below. As such, they form the cornerstones of any sound instructional program that relates reading and writing.

1. Both reading and writing must be meaningful activities.
2. To be meaningful, both reading and writing must serve real functions in persons' lives.
3. To be both meaningful and functional, reading and writing tasks must be related to persons' backgrounds of knowledge and experience.
4. Additionally, to be both meaningful and functional, reading and writing must proceed from some gist of the whole to a working out of smaller units.
5. Context of situation affects the background knowledge and strategy utilization of readers and writers.
6. Both reading and writing are private processes that provide their own feedback when allowed to continue uninterrupted.
7. Reading and writing are enhanced by use of alternate communication systems.
8. If persons are to develop as readers or as writers they must become risk takers.
9. Missed transactions are basic to both reading and writing.

10. Both the reading and the writing processes are transactional: in both, schematas are gradually refined as one's meaning is discovered, clarified, and missed transactions eliminated.
11. At the same time that reading and writing involve the creation of individual meaning, they also involve adherence to social conventions if meaning is to be shared.
12. Both reading and writing develop from external exchanges about constructed meanings to the internalization and self-use of such feedback.
13. There is one reading process used by readers of all ages and proficiency; likewise there is one writing process.
14. Proficiency in reading and writing means developing the flexibility necessary to adapt each process to new functional demands.

Similar conclusions as to what is basic in reading and writing have been reached by Farrell (1977), Elsasser and John-Steiner (1977), Gage (1978), Loban (1979), and Moffett (1979). Additionally, many of these same conclusions have been reiterated in a recent NCTE committee report (1979) on standards for basic skills writing programs. Developed in this study has been the missing conceptual basis for such recommendations. Finally, Falk (1979) has suggested that views of reading and writing, similar to those proposed here, also fit with recently discovered principles of oral language development.

Combining Reading and Writing Instruction

The original intent in undertaking this study was to discover ways that writing instruction could be used to enhance growth in reading and vice versa. Comparatively little substantive information on the relationships between reading and writing has been available. While a wide variety of writing theories have been developed, many do not correspond well with findings from recent process studies. Additionally, no theory of writing to date has really examined the process while taking into consideration socio-psycholinguistic views of reading, the work of discourse analysts, schema theorists, or contextualists. Therefore, this study has attempted to develop such a theory. This undertaking has led to the exploration of implications for the writing process of the following seven principles derived from schema-theoretic views of reading:

1. Development of a theory that could explain the process of writing, not just written products.
2. Development of a theory that viewed writing as a constructive mental process, not just the reconstruction of ideas already worked out.
3. Development of a theory that viewed missed transactions, as in miscue analysis, as evidence of processing.
4. Development of a theory that examined, using socio-psycholinguistic theories of reading, how the reading process itself operated within the writing process.
5. Development of a theory that explained the writing process at all levels of development.

6. Development of a theory that explored what it meant to view writing as a process of transactions.
7. Development of a theory that considered whether processing strategies important in reading and internal to the process itself also existed in writing, i.e., predicting, confirming, and disconfirming.

It is the willingness to entertain these ideas that sparked the development of the new theory proposed in Chapter III and critiqued in Chapter IV.

Chapter V then considered how students' development of the writing process could be fostered. The new theory has served as a touchstone to use in sorting and evaluating existing methods of writing instruction. It also has acted as a guide for determining important strategies for students to learn and for the subsequent development of strategy lessons that did not violate the process itself.

In this chapter, it becomes apparent that when the new theory is used, the process of reading and writing are alike and should share many instructional practices. One might even argue that reading and writing are alternate communication systems that operate in the same way and involve similar information about language universals. These universals involve not just facts about language known by writers and readers, but similarities in actual processing strategies.

It is a matter of concern, however, as it was at the outset of this study, that much reading and writing instruction does not emphasize nor foster discovery of similarities between the processes. In fact, the processes have frequently been viewed as opposites (Memering, 1979). Reading is broken down into a series of discrete skills. Comprehension results when texts are recoded from the graphics on the page. In contrast, writing is described as the encoding of thoughts into language. Persons must first learn to spell before writing thoughts, gradually learning to do so in larger units, etc. (Moffett, 1979). From these views, reading involves a one-way transmission of meaning from graphics to readers' minds. In contrast, writing involves a one-way transmission from writers' minds to the working out of graphic displays.

This study has attempted to pursue an alternate view. If the basic language principles outlined above are adhered to, then reading and writing are not, and cannot, be viewed as opposite processes. Instead, they must both be seen as constructive cognitive and language processes involving the same concepts. When such occurs, reading and writing not only complement one another, but become forms of communication between which learners alternate quite easily. Gage (1978), Bazerman (1980), and Hamilton (1980) have offered similar views and curriculum suggestions. When reading and writing are approached as constructive mental processes, students discover for themselves language universals that aid their development of both.

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Appendix I

Definitions of Terms for a Transactional Theory of the Writing Process

Primitive Terms

anticipate

dependency

environment

language

memory

mental unit/concept

motivation

perceive/perception

Derived Terms

acceptability	An element of textuality referring to a writer's intent that his/her product be regarded as cohesive and coherent text for which readers can construct a text-world model
activated	schematas stored in memory are brought to bear upon a writing task
ambiguity	1. incapable of being assigned, or knowing which is, an acceptable meaning, 2. a maxim of the cooperative principle that holds a writer should try to avoid obscurity and organize what she/he has to say
change	to form new relationships
closed text	a text for which only a limited range of meanings is possible
coherence	an element of textuality referring to the continuity among underlying concepts that a writer achieves in a text
cohesion	an element of textuality referring to the continuity achieved among surface elements of a text
communicate	the intention of the writer to change (or add to) the meaning network of readers or to change (or add to) readers' evaluations
communication system	any of the semiotic systems
confirm	to check that a text communicates a writer's intended meaning
constrain	limit

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construct	a process of transactions leading to the development of text
content	the collection of mental units/concepts which a writer wishes to communicate
context of situation	the total environment in which an event occurs—physical, cultural, social
convention	a norm
conversational implicature	an understanding of what is implied that can only be interpreted by knowing discourse conventions normally employed
cooperative	depending upon one another to achieve a common aim
cooperative principle	conventions used by writers and assumed by readers that aid in the construction of meaning. The principle includes maxims of quantity, quality, relation, and ambiguity
criterion level	1. the degree to which a writer intends a text to be open or closed, 2. point at which a writer believes readers will make appropriate inferences without having information explicitly given in text
cultural	historical perspective on the social codes of a society
cybernetic system	a dynamic work
default	potential slots in schematas that are not instantiated
descriptive vocabulary as indexical expressions	An interpretive procedure shared by writers and readers such that vocabulary chosen becomes a clue to the interpretation of events
disconfirm	to check and subsequently find that a text does not communicate a writer's intended meaning
dynamic	continually changing
editing	a writer's refinement of schemas at the syntactic and graphophonic levels
error	a missed transaction
et cetera assumption	an interpretive procedure used by writers and readers, through which details common to an event may be filled in or assumed even if not directly mentioned
evaluation	affective perception
expectation	a prediction
experimentation	1. an attempt to go beyond what a writer knows by testing out what she/he predicts will communicate effectively, 2. risk taking
feedback	confirming or disconfirming that the meaning being

	constructed actually communicates a writer's intended meaning
field	a semiotic feature within a context of situation that describes the content of the communication
focal mapping	the instantiation of slots in schemas
focal prediction	to anticipate slots in schemas
form	the features and organizational pattern(s) of a written product
function	meaning potential of a text
gist	overriding schemata
global mapping	the instantiation of schemata nodes
global prediction	hypothesis as to major nodes of world knowledge to be activated
graphic print display	marks on a page
ideational	those components of language that reflect a writer's perception of field
implicature	that which is not stated
incubation	a time interval after which a writer adds to, reorganizes, or removes propositions already generated
inferencing	the filling in of empty slots in schematas with default values
informativity	an element of textuality referring to the extent to which a text is open or closed
intentionality	an element of textuality referring to a writer's intent that a particular graphic display be regarded as text
interactive	occurring simultaneously
interpersonal	those components of language that reflect a writer's perception of tenor
interpret	to construct a meaning for
interpretive procedures	schematas possessed by writers-readers that permit them "to identify settings which would lead to 'appropriate' invocation of norms, where the norms would be surface rules and not basic to how the actor makes inferences" (Cicourel, 1974, p. 27)
intertextuality	an element of textuality referring to the relationships among a given text and other relevant texts encountered in prior experiences
knowledge space	the potential background knowledge a writer has that may be relevant to a text
link	to connect with another
meaning	a mutual dependency system resulting in the com-

	munication of unique perceptual events in relation to a total context of situation
metaphoricity	to construct meaning by perceiving the shared features of two concepts not usually viewed as related; highlighted are commonalities between features of low salience in the first term and features of high salience in the second
mode	a semiotic feature within the context of situation that describes both the communication system selected and the form of the message
model space	a selected amount of background knowledge that forms a consistent network across a text
mutual	cooperative
negotiability	the capacity of mental units to be expressed in any symbol system; unit in one system may be changed to another
network	a mutual dependency system
node	point at which separate propositions, subschemas, or separate schema merge to form relationships at a higher order
norm	an agreed upon way of expressing meaning
normal forms	accepted conventions shared by writers and readers to convey meaning that are particularly useful when attempting to interpret ambiguities. Ambiguities are resolved by selecting interpretations that fit with other conventions employed in the text
open text	a text capable of several meanings; the obligation of readers is to evaluate the entire text from a consistent point of view
parallel	acting simultaneously
pragmatics	the relationship between possible language options and those actually utilized based upon a given context
prediction	an anticipatory schema
print	the graphic display
process	a set of transactions, which in the case of writing results in a graphic print display
product	a graphic print display
proposition	a mental unit
proximal development	the zone between that repertoire of writing behaviors that a writer controls well and those she/he does not, yet recognizes may be important to the accomplishment of a particular writing task

quality	a maxim of the cooperative principle that holds a writer should write what she/he believes to be truthful and should provide evidence
quantity	a maxim of the cooperative principle that holds a writer should include only as much information as is required and not more
reading	the construction of meaning relative to a graphic print display
reciprocity of perspectives	a writer assumes there is no difference between how she/he and potential readers assign meanings to events
redundancy	number of times a similar meaning is repeated in a text
reflexive nature of discourse	surface-level cues as to how a text is to be interpreted
relation	a maxim of the cooperative principle that holds a writer should communicate what is relevant
relationship	having shared features
retrospective-prospective sense of occurrence	an interpretive procedure that compensates for the time dimension of writing, whereby a writer and potential readers resolve ambiguities. A writer settles them in upcoming text and readers, in turn, agree to suspend judgment until a writer does so, or a writer settles them in light of previous statements and again readers wait to see if a writer does so
revision	the transactional refinement of text involving systems of language beyond the graphonic or syntactic
schema	a group of propositions that work together in memory
schemata	a group of schemas that form a network
semantics	the meaning of words and concepts shared by members of a language group
semantics of syntax	procedures for utilizing the order of patterns and arrangements to build hypotheses
semiotic	the study of signs
sign	stimuli that mediate a person's relationship to his/her environment and may take on significance through reading to the development of higher psychological processes
situationality	an element of textuality referring to the context of situation in which a text has meaning
slot	a mental unit within a schema that is instantiated depending on the context of situation
social	the way in which people act themselves and how

	they interpret the actions of others
sounds	phonemic features, phonemes, and intonation patterns
subschema	proposition linked to and forming part of a schema
syntax	rules governing the arrangement of morphemes, words, and phrases
syntax of semantics	repertoire of conceptual relations and procedures for building or recovering schemata
system	a group of propositions that depend upon one another to interpret meaning
tenor	a semiotic feature within the context of situation that describes a writer's relationships to his/her readers
text	meaning network constructed from a graphic print display
textual	those components of language that reflect a writer's perceptions of mode
textuality	the degree to which elements in a text are related to one another such that a mutual dependency network is present. More specifically textuality includes the qualities of intentionality, acceptability, coherence, cohesion, situationality, intertextuality, and informativity
text-world model	meanings constructed fit within a consistent mutual dependency network
transaction	the interactive and dynamic activation, instantiation, and refinement of schemata
uncertainty	lacking feedback
world knowledge	a writer's total accumulation of conceptual and language knowledge
writing	a transactional process of progressive refinement, resulting in a graphic display for which meaning can be constructed